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THE MUSIC REVIEW

May, 1961

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THE MUSIC REVIEW

Edited by GEOFFREY SHARP

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FRITZ ROTHSCHILD

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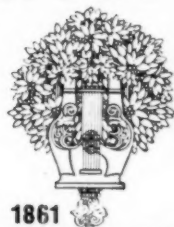
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The slow Movements of the Sonatas of John Field

BY

TREVOR DAVIES HIBBARD

EVEN the most superficial study of the works of John Field, the early nineteenth-century Irish composer, in their original editions reveals a great number of vagaries and inconsistencies in their titles and descriptions, for many publishers issued his works in varying arrangements with absolutely no sense of a need for uniformity. Since few of them have been reprinted since his own days, the modern student is confronted with the task of determining the composer's intentions for himself from a somewhat bewildering array of sources. One meets many confusions which often seem to make the very character of the works a matter of doubt. An example of this is contained in the title-page of one edition of his 7th piano Concerto, which, although obviously intended to be played with orchestral accompaniment, was published as:—

"Seventh Concerto for Piano with accompaniment of Orchestra or Quartet, or for Solo Piano; dedicated to Mlle. d'Albini and performed in Paris by the author".

One presumes that when Field played in Paris he had orchestral accompaniment, but in publication he was giving the performer considerable latitude in the forces he would employ to play the work. The probable reason for this was that, like many of his contemporaries, he was considering not only the professional but also the amateur musician, who was not likely to have an orchestra at his disposal, or even a quartet, and his interest in selling copies of the works was great enough to cause him to make arrangements for them to be performed by the soloist alone. Although I have not seen such a blatant announcement on other scores, it is certainly true that in the original editions it was the regular practice to make the whole work capable of being played by a solo pianist, as a Sonata. In the scores the *tutti* sections are reduced to a piano arrangement and inserted into the solo part, with the words *tutti* and solo supplied where they are required to guide the pianist who is playing with an orchestra. Unfortunately this remains only an intention in many scores, since the copyists tended to be rather lax in the matter, and the present-day student frequently has to divine the composer's intentions from internal evidence alone.

Equally unusual is the statement on the title-page of the Carli edition of the A flat *Divertissement* for piano and string quartet:—

"N.B. Lorsque l'on execute ce quintette avec des violons et le pianoforte, compte des pauses depuis ce signe T jusqu'a celui ci (. .)".

This implies that with at least the tacit consent of the composer the work may be performed by forces other than those of the piano quintet according to the availability of instrumentalists, and the published copies make allowances for

this. It is not necessary in this present study to examine the extent of these alterations, but only to note that as with the concertos it does not necessarily follow that any available copies show the only possible version of a work by this composer.

In addition to enabling incomplete forces to perform his orchestral and chamber works, Field, or his publishers, takes account of those members of the public who prefer to buy only portions of lengthy work, in much the same way as publishers today sell copies of "The Theme" of such works as Tchaikovsky's B flat minor piano Concerto. Therefore there is a development of the phenomenon noted above in the publication of single movements as solo pieces, an example of which is the Rondo in E flat published by Breitkopf and Härtel as "Tiré du 1^{me} [sic] Concerto". To have a clear picture of the extent to which this was done, one should glance at the list of Field's works given in *A Dictionary of Musicians*, published by Sainsbury and Co. of London in 1824, when Field was alive and still adding to the total of his compositions. The ordering of the works is exceedingly muddled and seems to be a series of publishers' lists copied out one after the other with no attempt at sorting or correlation. It includes the Rondos of the first five concertos, which, with other works, are given the label "(ad lib.)". By general custom this would seem to indicate that the forces needed to play these works are very much left to the discretion of the performer.

The result of such a lack of policy is a situation in which works exist in a manifold variety of arrangements. Many exist side-by-side in versions with and without string parts, and many more are published complete and in separate movements. At least one seems to have been published in a full version and a curtailed edition. There does not even seem to have been any regular practice of publishing first the complete authentic score, to be followed by the varieties of it which would be the case if we only had pirated editions to cope with.

Up to date, no publisher or editor has tried to bring order out of this chaos and publish all the works in what seem to be the authentic versions. This of course is not without its compensations for we can study most of these works only in the original editions, which are not overlaid with the judgments of various editors. When we have sorted the scores out, we are able to look at them with unbiassed minds and see them for what they are; a collection of works which stem from different publishers in different countries, full of varying titles and arrangements. They may not give us a logical survey of what Field actually wrote, but at least our minds need not be hampered with the possibly erroneous opinions of generations of editors.

The situation is different, however, in the case of the Nocturnes, by which Field is best remembered. The first important collected edition of them was that of Franz Liszt in 1859, which has exercised some influence at least over all subsequent editions. This gave us a series which have been popularly, if not universally, accepted as the total of Field's Nocturnes, even though it is actually a miscellany of Concerto movements, Chamber Music movements, and various piano pieces as well as true Nocturnes. It would seem as if Liszt had

seized all the pieces he could find which were more or less in the style of Nocturnes, and bundled them together under this heading. In his enthusiasm for the works he does not appear to have paid much attention to the fact that he was taking many works out of context, which has added to the confusion of succeeding generations. The pieces are so diverse that one cannot be completely sure that they are really Nocturnes, even if they occur nowhere as part of a larger work. For instance, the Nocturne no. 14 was also published as "Etude in G major" and many others were actually published as "Romances", a title that Field used earlier than that of Nocturne, but which Liszt equated with it. This word was used by Mozart at times to indicate a slow movement and one must wonder whether this meaning has any significance here. The situation is so confused therefore that we must be prepared to accept the possibility of any of them being pieces written otherwise than as Nocturnes.

This rather lengthy consideration of the confusion in sources of editions of Field's works is necessary to put into perspective our judgment of editions of the Sonatas, which at first sight seem to be accurate transcriptions of the originals.

Field wrote four works which he called Sonatas, before venturing into the writing of Concertos, and to some extent they must be considered as preliminaries for the Concertos. Three were early works for which Dessauer gives 1802 as the probable date and the fourth appeared later, in 1814. The first three were dedicated to Clementi and therefore one would expect the youthful Field to mirror fairly closely in them the Sonata style of his teacher. Although even these contain instances of Field's personal technique, in style and general conception they are obviously indebted to Clementi, but they differ from the latter's Sonatas in one important respect—they have no slow movements but consist only of a movement based on sonata-form followed by a final Rondo, a form followed also in the fourth Sonata. Clementi, on the other hand, generally follows the conventional three-movement plan, and when he veers from this he is far more likely to add a movement rather than to subtract one. The only one I know which is in two movements is *op. 40, no. 2*, which has an introductory *largo* before the final *allegro*, so that in fact there are three movements, but the last two are joined together in a manner which was common to the age.

If one considers the confused array of works described above, one must wonder whether perhaps Field actually wrote slow movements to these Sonatas as Clementi would have done, and published them under some other title. If so they are probably contained in the miscellany which we know as Nocturnes, and a study of these compared with the Sonatas might give us an answer to our query.

In the year 1814, Field published four pieces for the piano which he called Romances, one on its own (now known as the 9th Nocturne in the Peters edition) and then three together (the first three nocturnes in the Peters edition). Before the end of the year the fourth Sonata appeared, some twelve years after the first three. No more of the so-called Nocturnes appeared before 1817 and of course after 1814 Field published no Sonatas as such, confining himself to

Concertos. In actual fact these eight works stand out among Field's early publications in that they are the only ones, except for the *Marche triomphale*—a piece of utter claptrap—and the first *Divertissement*, which are wholly original. The rest are all fantasies or sets of variations on well-known tunes, a common type of composition at this time.

From the study of these eight works facts emerge which seem to me to be too significant to be dismissed as mere coincidence. In the first place both Sonatas and Rondos are four in number, appearing as a group of three and a single one; and secondly there is a correspondence of keys, which the following table shows:—

Sonata no. 1, E flat major,	Romance no. 1, E flat major,
no. 2, A major,	no. 2, C minor,
no. 3, C minor,	no. 3, A flat major,
Sonata no. 4, B major,	Romance no. 4, E minor.
	(i.e. Nocturne no. 9)

The first Romance is in the same key as the first Sonata and the E minor Romance is in a key which would be very reasonable in the slow movement of a B major Sonata. A transposition of the order of the second and third Romances would give the same key for the third of each type of work, and internal evidence to be discussed later gives justification for such a move.

Ex. 1



Ex. 2



Ex. 3



Ex. 4



Ex. 5



The only surviving key difficulty exists in the matter of the A of the second Sonata and the A flat of the third Romance. This, I think can be removed by looking at a parallel in the two sets of variations of "Speed the Plough". In both, the Scottish song is presented initially in very similar arrangements, with

only slight differences of lay-out and of use of repetition (some of which could easily be the result of inaccurate copying), but the key of one is B major and that of the other B flat major. The character of the variations gives no indication of a reason for this and we can only suppose that Field was not worried by such changes of tonality. (Another rather similar case occurs in the 6th Concerto which contains the F major Nocturne transposed down a semitone.) This evidence seems to show that he was quite capable of writing out the Romance in a different key for independent publication.

Thus the numbers of the Sonatas and these 1814 Romances correspond and their keys can be correlated without stretching one's imagination too far, but the most interesting observation is made when one studies the works themselves. Ex. 1 shows the opening theme of the first movement of Sonata no. 1 and Ex. 2 that of its last movement. They share the same opening notes, which in the works of many composers would not be worthy of comment, but the student of Field soon becomes aware of the composer's habit of starting a tune with a familiar phrase to branch off into something quite different. Ex. 3, the opening of the Romance in E flat, shows the same two notes and the second bar also seems to be related to the second bar of Ex. 2. There is a similar correspondence between the first theme of Sonata no. 3 and that of the C minor Romance (Exs. 4 and 5 respectively). To search for further thematic resemblances would probably be forcing the issue, but if one makes the experiment of playing these Romances as slow movements to the Sonatas one is at no time conscious of any dissonance of style.

These observations are not put forward to provide firm proof that the Romances are the "missing" slow movements of the Sonatas, but rather to open up avenues of further research. The theory put forward does however seem to me to offer definite possibilities, which can perhaps be accounted for on commercial grounds. One must remember Clementi was not only a musician but also a business man, spending much of his time selling pianos and publishing music, and his pupil Field worked during his years of apprenticeship as a salesman and thus learnt the principles of business as well as of music. If this publication of the slow movements of the Sonatas on their own is a fact, the reason could well be that it was more profitable to do it this way, but it is perhaps more likely that with our present very imperfect knowledge of Field's works we are lacking in details which would cast further light on the matter.

I have heard the opinion expressed that some of the works originally published as Nocturnes were played by Field himself as slow movements to the Concertos, an idea which seems likely from all points of view, and yet the published editions of most of these contain no slow movements. It is easily possible that the same state of things existed in the case of the Sonatas, but until further biographical and bibliographical material is available we must suspend judgment in the matter and regard the existence of slow movements to John Field's Sonatas merely as an interesting possibility.

Missing Bars and corrupted Passages in classical Masterpieces

BY

PAUL BADURA-SKODA

GENERALLY speaking, musicians greatly respect the printed score. In the case of collected or *Urtext* editions, this respect often becomes a sort of pious reverence. To be sure, faith in a good edition is in itself quite praiseworthy, since a good printed reproduction is the most important link between composer and interpreter. However, this trust in a good edition must never be blind. Even the best editor may go astray; the most conscientious engraver may make mistakes. In cases of doubt, it is only the composer's original manuscript that can conclusively decide the point.

Under the title "Regarding some supposedly corrupt passages in the works of Bach, Mozart, and Beethoven" Schumann wrote in the *Neue Zeitschrift für Musik*, 1841:¹

"If all [*i.e.* corruptions] were known, volumes could perhaps be written about them; indeed, I believe that the masters must sometimes be smiling when the sound of some of their works reaches them at their celestial abode, complete with all the mistakes that have been confirmed by time and custom, and even by anxious piety . . .".

He goes on to instance several mistakes widely prevalent in contemporaneous editions; amongst them is a curious case from Mozart's G minor Symphony that deserves to be mentioned again. For bars 29-32 (and the parallel bars 100-103) of the *Andante* of this work, Mozart had provided an alternative version on a separate sheet of paper, presumably in order to facilitate the intonation of the old woodwind instruments in the difficult keys of D flat and G flat major respectively. In the score, these passages were marked by double bars which were apparently misunderstood by some copyist or other. The fact is that all early copies and prints of the Symphony contain the four bars noted on the separate sheet *in addition* to those occurring in the movement;² as can be seen from Schumann's essay, this is how the movement was performed. If Schumann—who did not know the autograph—had not advocated the omission of the four bars on the ground that the unmotivated twofold modulation from D flat major to B flat minor as well as the bad part-writing produced by the juxtaposition of the two four-bar phrases could not possibly originate from Mozart—who knows whether this mistake might not have crept into the old Mozart *Gesamtausgabe*? This supposition is not as far-fetched as might appear, considering that custom may have blunted contemporary ears, and that custom is the most unyielding obstacle to the eradication of ingrained mistakes. On the other hand, we are fortunate today in again having at our disposal the autograph of the G minor Symphony; its careful examination

¹ R. Schumann, *Collected Writings*, 2nd Edition, Leipzig, 1871, Vol. II, p. 228 ff.

² H. C. Robbins Landon, Preface to IV/11, Vol. 9 of the "New Mozart Edition", p. x and 267 ff.

should have clarified the true facts of the case even without reference to Schumann's observations.

Unfortunately, many valuable autographs that were in the possession of the former Preussische Staatsbibliothek have been lost during the second world war; among them the manuscripts of Beethoven's Seventh and Ninth symphonies, *The Magic Flute*, and about ten of Mozart's piano concertos. The gravity of this loss can only be appreciated by those who realize how often it is necessary to collate passages with their sources and how often, even today, the most incredible mistakes are dragged on from one printed edition to another. In our misfortune we must count ourselves lucky for the fact that the pianist Rudolf Serkin, now living in the USA, before the war became so interested in a doubtful passage in Mozart's B flat major Concerto, K.595, that he asked friends to send him a photo-copy from Berlin; he himself was, for "racial reasons", debarred by the ruling powers from using the library. In the last resort, we owe it to him that this photo-copy of the autograph, which had disappeared among the papers left behind by Toscanini, and for which the conductor Georg Szell and I myself were searching assiduously, is again at the disposal of researchers. Until the—so far very hypothetical—reappearance of Mozart's original manuscript, this photostat will be of inestimable value.

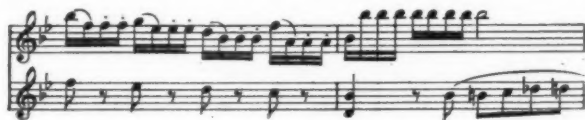
The study of this photostat proved that in all modern editions (excepting the long unobtainable Steingraber Edition, nr. 2198 and the recently published volume of the *Neue Mozart Ausgabe*) there are seven bars missing in the first movement; as is incontrovertibly shown by Mozart's hand-writing, the seven bars 352–358 (Eulenburg score p. 40) following immediately on the cadenza must be inserted between bars 46–47. Thus, the movement gains a formal equilibrium which is otherwise denied to it. For, in the old version, the first appearance of chromatic tension was just before the development, at a juncture where Mozart never incorporates new thematic material. The new version also amends the illogical part-writing in the first and second violins, bars 46 and 47. The old text was



[* three-part chord, unmotivated by part-writing and difficult of execution.]

[** unmotivated downward skip of a ninth.]

Now this becomes, at the beginning of the insertion



and at the end



It was in this form, with the inclusion of the seven bars, that the Concerto was printed by Artaria in Mozart's lifetime (August, 1791).

The question arises here, of course, how it could happen that the editors of the old Mozart *Gesamtausgabe* and those of the otherwise excellent Eulenburg score (no. 775), both of whom had based their revisions on the autograph, should overlook those seven bars? The explanation is furnished by the original manuscript: by way of abbreviation, Mozart noted in all the parts of his score an "NB" before bar 47, adding—albeit rather illegibly—the words "seven bars" above the top staff. The passage to be inserted here, bars 352–358, was marked by him with a "*" at the beginning and end in every part. Apparently, this abbreviation was not understood by the editors. Anyone who is conversant with Mozart's manuscripts, however, will know that Mozart makes very frequent use of such abbreviations. The third movement of this Concerto, for instance, contains such an aid to notation at bars 315–322; it indicates the entry of bars 51–58 at this point. The only difference is that in the first movement Mozart did not write out the first passage—a noteworthy fact, certainly. But why should not Mozart, for once, have erroneously omitted some bars when making a clean copy, correcting his mistake subsequently? Be that as it may, Mozart's indications leave no doubt that these seven bars must be inserted in the exposition of the first movement.³

Another important discovery was made during the perusal of the photostat of the second movement. This contains a famous passage consisting of so-called "Puccini-fifths"; consecutive fifths, that is, produced by the first violins' doubling, in the lower octave, of the upper part of the piano's first inversions:



[According to AMA (where the C at the movement's start is missing) and the Eulenburg Edition.]

³ It is ironical that, on the occasion of a recording of this Concerto that re-instated those seven bars, Serkin had to pocket a review in *The Gramophone*, 1959, July and October issues, in which he was criticized for "arbitrary additions of his own".

This remarkable progression, unique in Mozart, has long been an object of contention among musicians. Some consider this passage a "particularly bold stroke" of the "late" Mozart, while among connoisseurs of Mozart's style one often met with the conviction that this was just a "lapse".

This second opinion is right. However, the "lapse" lies not so much with Mozart as with his editors. To understand the original notation of this passage one has to delve a little into Mozart's technique of composition and notation. As A. Einstein had already observed,⁴ it seems likely that Mozart always composed and notated an orchestral work in two stages, first writing the principal parts throughout the work and subsequently completing the score. He followed his usual method in the case of this Concerto too, first writing the piano part and perhaps the orchestral bass, and in doing so, treating bars 104-105 uniformly with bars 2-3. Later, however, when doubling the melody of these bars by the first violins in the lower octave, he obviously noticed the fifths produced between this and the accompaniment of the piano. He now expressly crossed out the seven thirds in the left hand of the piano, wrote "Basso" over this stave (best translated here as meaning "lower"), and squeezed in a bass-clef before the progression of thirds.

[According to the autograph]

[Slurs here over two bars]

bar 103
1 Viol. Solo



Piano [sic.] Basso

That this correction must have been made in great haste is shown by the fact that Mozart did not take time for writing out the new version in full; he also forgot to renew the treble-clef two bars later. Naturally, the thirds originally written in the treble-clef make no sense at all in the bass-clef. Thus only is it to be explained that almost all editors (here again, the above-mentioned Steingraber Edition is an exception) have hitherto misunderstood the true meaning of Mozart's direction "Basso", rejecting the inserted bass-clef and reinstituting the chords expressly deleted by Mozart, in their original version. As a result, of course, the controversial progression of fifths was re-established.

⁴ A. Einstein: "Mozart's Handwriting and the Creative Process", *Papers read at the International Congress of Musicology*, New York, 1939; also Einstein's preface to the *Köchel Catalogue*, third edition.

A harmonization of this passage is clearly only possible with first inversions. The correct rendering, surely, is this:



Mozart's manner of composing to which we alluded above, also goes to explain, incidentally, a small rhythmical divergence encountered in this movement. When the theme was first written down in the piano-part the first crotchet in bars 2, 6, 26, 30, 83, 87, 104, 108 (and also in bar 124) was given one dot only. It was probably only during the writing of the orchestral part that Mozart decided on double-dotting in this context; he wrote  instead of  in bars 10, 14, 104, 108, 124 of the orchestra part. It is, however, self-evident that the rhythm must be treated uniformly at all occurrences of the main motif; this is conclusively demonstrated by bars 104 and 124 where the two rhythmic notations coincide; in these circumstances a rhythmic differentiation is unthinkable. The double-dots are, of course, preferable in execution. (In bar 123, however, it would be wrong to alter the original notation of a single dot followed by semiquavers, since this bar corresponds to the next bar but one, bar 125, where the orchestral parts do not contain double-dots either.)

We are not always in the happy position of being able to disprove, with the aid of the autograph, a copyist's error that has entered all printed editions. And yet, relying on one's sense of style, logic and intuition, one should be able to hunt out the worst mistakes of this sort. After all, it is shown time and again by analysis that the structure of masterpieces is subjected to a much stricter logic than is commonly assumed. To be sure, we must often overcome a certain timidity if principles recognized in analysis are to be applied constructively to those cases where sources are unreliable and contain suspect passages or obvious mistakes. Yet this is surely the most rewarding, if the most difficult, task of stylistic criticism.

Concerning the piano Sonata in A minor, *op.* 42, DV. 845, the editors of the Schubert *Gesamtausgabe* commented that the first print by Pennauer (Vienna, 1826), which was the only source at their disposal, contained an unusual number of mistakes, most of which had been rectified by them "as a matter of course" (*i.e.* tacitly). Indeed, the Pennauer first print remains to this day the only available source, the autograph having disappeared in Schubert's time. The corrections undertaken in the *Gesamtausgabe* are very commendable, but unfortunately they do not extend to all the errors of this edition. We might even assert that the editors overlooked the gravest error

in this Sonata, seeing that they failed to notice that four bars are *missing* from the second movement and one bar from the finale. For in all printed editions, the first variation of the theme is by four bars shorter than the theme itself and all subsequent variations.

This is the second part of the theme and the second part of variation I according to the first print:

It is unimaginable that such a reduction was intended by Schubert. This would entirely contradict the logic of Schubert's variation form. In the first edition (and therefore in all other prints of this movement) the formal scheme looks like this:

Theme: A (8 + 8 bars) — || : B (8 bars) — A (8 bars) : ||
 Var. I: || : A(8) : || — || : B (4 ??) — A (8) : ||
 Var. II: || : A(8) : || — || : B (8) — A (8) : ||

All other variations as Variation II.

The theme, then, is in ternary form, each section comprising eight bars. As customary, A and B + A are repeated every time; in the theme, however, the repeat of A¹ occurs in the upper octave, and is therefore written out.

It is among the most important structural principles of the classics that the construction of a piece out of four and eight-bar periods is interrupted only in exceptional circumstances. A group of four or eight bars is like a corner-stone: rhythmically balanced, and thus static, it lends itself to the compilation of great formal structures such as a symphonic movement. The masters were well aware of this periodic syntax and its numerical principle, as is shown by their frequent operations with numbers in the margin of their manuscripts. There are instructive examples from Mozart to Bruckner that show what great importance was given to this principle. The supposition that the above-mentioned example may embody Schubert's specific intentions proves naive on closer inspection. Comparison with all the other instrumental variations of Schubert's would teach us that he invariably conformed closely to the metrical and harmonic structure of the theme in the first two variations. It was just in his approach to variation form that Schubert proved himself most conservative; formal innovations and audacities such as Beethoven introduced, do not occur with Schubert, and least of all in the province of rhythm and metre. In the taking of harmonic liberties he was somewhat less conservative: he was quite capable of transposing a variation to a remote key, as in the B flat major *Impromptu*, *op.* 142, no. 3. But here, too, Beethoven had gone further when, in his piano *Variations op.* 34, he put every variation into a different key. Thus, it is not only our musical instinct that rebels against the intentional omission of those four bars—when, some while ago, a colleague played this movement to me for the first time, I thought he had had a memory lapse⁵—but it is also on the basis of stylistic analysis that we advocate the restitution of the missing bars.

How could this mistake have happened in the first place? Obviously, we are faced here with a gross blunder on the part of a copyist or engraver of the first edition. Passages that repeat identical or similar musical ideas often contain errors of this sort. Thus, in a Peters Edition of the Beethoven Sonatas, published in 1900, two bars are missing from the first movement of the Sonata *op.* 109 (bars 44/45). In an otherwise unexceptional contemporary copy of Mozart's piano Sonata, K.309, bars 62 to 72 of the third movement are missing. (The autograph of this work is not extant. If a first print of this work had not, as it happened, appeared during Mozart's lifetime, this copy would have been treated as a source, and these bars might conceivably be missing even in today's editions!) An engraver's error in the first print of the Schubert Sonata is the more likely as a new page should have been started with those four bars. The omission of bars at the turn of a page is one of the most frequent lapses of copyists. Incidentally, Schubert himself once left out four bars when copying a sketch. In the handwritten fair copy of the finale of the G major Sonata, *op.* 78, DV. 894, bars 96-99 are missing, while they are contained in an extant sketch of this passage. However, Schubert himself subsequently noticed his mistake, wrote the forgotten bars in the margin of the page and inserted them by means of a "*vide*" sign.

⁵ Instinct rebels here since it is a case of offending against musical logic, comparable to the omission of a line in a poem which throughout consists of four-line stanzas.

It is, then, the task of the interpreter—the “re-creative artist”—to restore, in his performance of the A minor Sonata, those missing bars in the spirit of Schubert, as far as this may be possible. The observation made above that mistakes of this sort occur virtually only in identical or similar passages, should facilitate this task. More likely than not, the four bars contained nothing specifically new, such as is the exchange of parts occurring at the parallel passage in variation II; they presumably contained a more or less precisely figured repetition of the theme, analogous to the first part of the variation.

We must now establish which are the bars of the middle section that were inadvertently omitted: the first or the second four? In view of the theme and the subsequent variation, this question can be answered unequivocally. For in both cases, the fourth bar of the second section brings a half-close *with* a six-four suspension, whereas the eighth bar brings a half-close *without* one. Moreover, in the theme and in the second variation the enhanced dominant is only introduced in the third bar of the second section in its first inversion (on the third beat), but in the seventh bar in root position (with D in the bass). We can therefore assume that it is the second four bars that are missing, although the progression of the bass-line in the fourth bar seems, at first glance, to point to the opposite. For the progression of the upper parts corresponds here to bar 4; the bass-line, on the other hand, to bar 8. But it may have been this very fact which gave rise to the mistake. In contrast to the upper part, the bass progressions in bars 4 and 8 seem to have been almost identical, and may therefore have prompted the copyist or engraver to skip over the four bars.

The restoration of bars 4-6 should not prove too difficult. The following possibilities arise:



[more cautious, but also more conventional]

Far more difficult is the restoration of bars 7-8. Seeing that the beginning and end of the first variation lie an octave higher than in the theme, whereas its middle section is in the same range, the half-close in the eighth bar of the second section must, differently from the theme, be reached by way of an

ascending line leading to g'' . The best solution is to take over Schubert's own melodic progression in variation II:



[derived from var. II]



Other possibilities are:



[or]



[or]



These versions are inspired by the second variation. But one might also consider structures whose bass-lines would correspond to the theme; *i.e.* which would introduce the E flat not in the treble but in the bass:



These latter attempts at restoration are, however, less convincing than the first one.

Placed in its context, the following restorative attempt seems to me the happiest:

[*etc.*, as in the printed editions]

On the various occasions when I have played this version in public, it has never been recognized by any listener as "Un-Schubertian".

These missing four bars are not, however, the only obvious mistake of the engraver of the first edition. In the closing group of the finale's exposition,

the four-bar groups are unexpectedly interrupted by a three-bar group (bars 155-157) which disturbs the rhythmic flow:



A three-bar group among so many four-bar groups upsets the metrical balance of a movement; it gives the effect, as it were, of an unduly short beam in the design of a roof. On occasion, to be sure, the composer confuses our rhythmic sense intentionally; in such cases, however, the disturbance is well-founded. Take, for instance, the irregular periods at the beginning of this movement. The eight-bar beginning of the theme is followed first by a six-bar extension, its immediate repeat by a ten-bar extension, but the balance is re-established on a higher level by the fact that these phrases sum up to sixteen bars. A similar logic cannot, however, be found in bars 153-155.

Here we have an unexpected three-bar group surrounded by many four-bar groups. But if we look at the parallel passage in the recapitulation (bar 462) we notice at once that this group is preceded there by a general pause of one bar's duration, which re-establishes metrical balance. Without doubt, the same general pause should be inserted between bars 154 and 155; for it is very unlikely that Schubert would have intended such a minute variation in the recapitulation. Analogous to the recapitulation, the exposition should be:

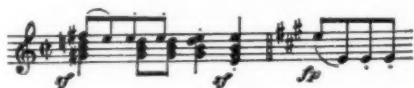


This view is further supported by the fact that Schubert frequently worked out his recapitulations schematically, without changing the rhythm or any other features of the composition. To be sure, with the exception of the one-bar pause, the recapitulation of this movement is exactly the same as the exposition.

There are some other, probable or obvious, misprints of the first edition that were taken over by many newer editions, such as the, in general unexceptionable, Universal Edition. It is to the latter that reference is made in the subsequent notes. *First movement, bars 2-3, 6-7.* Certainly a slur should be put above the dots according to the parallel passages.

First movement, bar 195. Charming as this variation of the bass-motif is, it is likely to be a printer's error; cf. bar 35.

First movement, bar 199, last crotchet. The chord in the right hand would be better written as a triad, analogous to bar 39:



The change in the chord-position prepares, as a point of part-writing, for the octave-leap of the melody.

Second movement, bars 7 and 27. Above the *staccato* dots, a slur is to be inserted, analogous to bars 3 and 11.

Variation II. Between bars 9 and 10, the g of the tenor ought to be tied over, as it is in the treble between bars 12 and 13. The solution of Erwin Ratz (U.E.), who in the upbeat to the second part prints a flat before b', analogous to the a' flat of the next bar, has more to recommend itself than the version of the *Gesamtausgabe* which prefers to suppress the flat before the a of bar 9. For it is in this variation that Schubert begins to experiment with the shades of the minor mode. Moreover, the notation



as a triplet



instead of, as elsewhere in this variation, as a mordent



is thus easily explained by the presence of the unusual step of an augmented second.



Third movement, bars 3-4. Analogous to bar 95, a *crescendo* is probably to be added. In bar 20 a tie of the upper part seems indicated.

Third movement, bar 17, second beat. Analogous to bar 109, a *fp* should be added.

Third movement, bar 68, last crotchet. An F sharp should presumably be added to the left hand chord, as four bars later.

Third movement, bar 130. Analogous to bar 32, a *pp* is to be added.

Third movement, Trio, penultimate bar. The top note of the left hand chord should probably be *f*'. In the printed version, bass and treble form curious consecutive fifths.

Fourth movement. The motif  is presumably to be played with a mordent every time. That is, never .

Bars 404-410. Schubert most likely wrote the following articulation in the left hand:



Fourth movement, bar 510 (the fortieth bar from the end). The first note in the left hand should be *g*, analogous to the parallel passages. The resolution of the preceding bar's dominant seventh is relegated to the right hand chord. The melodic character of the motif deriving from bar 3 of this movement must, of course, be maintained.

Unfortunately, some editors have added, without any comment, bass-progressions that go below the lowest note of Schubert's piano (*contra f*); this is to be deprecated particularly in bars 418-420 of the last movement. Here, the added octaves make the sound too thick. The first edition has single notes from the second half of bar 418 on.

Finally, mention may be made of a missing bar in a less important work.

In Mozart's Variations on a Minuet of Duport, K.573, a bar is obviously missing in the first print and in all later editions. In the coda, Mozart surely wanted the motif



to be answered by its mirror-form:



In the prints, however, this pretty "mirror" is dimmed in the following manner:



This three-bar group is quite un-Mozartian—we could mention a hundred similar cases in other works of Mozart in which the four-bar grouping is never abandoned.⁶

One hopes that one day editors will arise with the courage to correct such mistakes⁷ even though the autograph, which alone could give ultimate certainty, may be lost.⁸ For—to conclude with another quotation from Schumann⁹—"How better to prove our veneration for the great masters than by trying to remove from their works the damage wrought by *error or accident*?"

[Translated by Paul Hamburger and published by permission of Neue Zeitschrift für Musik wherein the German version first appeared in November, 1958 (Ed.).]

⁶ For instance, the piano Concerto in E flat major, K.449, 3rd movement, bar 258 onwards; piano Concerto in F major, K.459, 3rd movement, bars 444-453; Variations on "Come un agnello", K.460, var. VII, immediately before the cadenza:



and in the cadenza

three times

middle of the cadenza, etc.

⁷ It goes without saying that corrections of this nature must never be undertaken without footnotes.

⁸ Since this article was first published in German (1958), I have been fortunate enough to get confirmation of one of my theories. By happy coincidence a new source was discovered for the Duport variations. The late Dr. Ernst Fritz Schmid, during his research work as an editor of the *Neue Mozart Ausgabe*, found an early copy in which the missing bar is written.

⁹ *Collected Writings*, Vol. II, p. 233.

The Interpretation of Schubert's decrescendo Markings and Accents

BY
ELIZABETH NORMAN

NOT infrequently in Schubert's orchestral and chamber music we find in a movement ending *forte* or *fortissimo* that the final note carries a dynamic sign whose interpretation is perhaps not altogether straightforward. In the Symphony no. 3 in D major (D.200), for example, the closing bars are as follows:—



(This sign * is given only *under* the stave, and not for each instrument.)

How is the sign below the dotted minim to be interpreted? Is it a *diminuendo*? Or is it an accent? Similarly, the final bars of the first movement of the *Unfinished* Symphony (D.759) are:—



and of the last movement of the Great C major Symphony (D.944)¹



and those of the Quintet in C (D.956) are printed:



There has been considerable misunderstanding and doubt concerning Schubert's use of the marking >. In studying his autograph manuscripts several factors become clear.

¹ The editors of the 1959 Philharmonia miniature score of this Symphony, O. E. Deutsch and Karl Heinz Füssli came to a different conclusion here, and printed an *accent* on the penultimate note.

First, until about 1819 he was careless in his use of this marking in his full scores, while he shows himself to have been more careful in the few copies of the instrumental *parts* which he made and are extant. Thus, his score of the string Quartet in D of April, 1814 (D.94) contains many signs which could equally well be read as accents or *diminuendi*: in his own copies of the instrumental parts the sign appears almost without exception as an accent. This care extended also to his songs and piano music, in which his intentions are usually abundantly clear. Already in 1816 he shows a tendency in his instrumental scores towards greater discrimination between the markings of a *diminuendo* and an accent. This may be seen occasionally in the *Tragic* Symphony in C minor, no. 4, (D.417) of the April, and in the string Trio in B \flat (D.471) of the September of that year. In both of these works there are examples of small > signs indicating certain accents. By 1820 Schubert had adopted this very much smaller sign to indicate almost all accents, leaving no doubt as to how they should be interpreted. The true *diminuendo* sometimes appears to have been drawn with some care to distinguish it from the smaller sign for an accent. In the *Quartett-satz* in C minor of 1820 (D.703), for example, there are many small clearly written accents. This also applies to the *Unfinished* Symphony of 1822 and, of course, the Great C major Symphony of 1828.

Secondly, we find that, especially in the earlier period, Schubert usually restricted the small > marking to *piano* sections in the music, reserving the sF or Fz marking for loud passages. This factor serves as a guide to how such accented notes should be played.

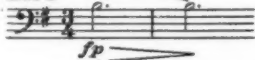
Thirdly, Schubert sometimes used a > marking in combination with a FP or Fz: thus we find FP > or Fz >. Again, the first of these usually occurs in a *piano* section, the latter in a *forte* section. The different intentions in each case are self-evident. Notable examples of this occur in the Octet of 1824 (D.803): the opening chord is written F > P in both clarinet and bass parts; after this, there appears frequently a FP >, with often a long *diminuendo* sign, and sometimes a FF > P, as on the sustained note after the double bar in the third movement:—

Ex. 5 (*allegro vivace*)



Examples of this also occur in the manuscript of the string Quartet in G (D.887) of 1826: thus, in the Trio, the cellos open alone with a sustained B written by Schubert:—

Ex. 6



There are also many examples of the sF >, FP > and FF > markings in the *allegro assai* finale of this Quartet. In addition, there is the example in

the same movement of *diminuendo* passages containing accents written thus:—



(In the next passage, the same *diminuendo* extends over one-and-a-half bars). This examination suggests that Schubert's FP > markings were at this time certainly intended as F > P.²

The problem of the interpretation of Schubert's markings is undoubtedly more difficult in the instrumental works of the earlier period, especially in the symphonies. No rule is always valid, and each case has to be examined in its own context, if possible with the autograph manuscript. However, as a guide to the performance of these works, Schubert seems to have intended a *leaning-accent*, a warm pressure on a note, a quick *diminuendo* on a note of slightly greater volume than the norm. If the note is of short duration, the accent will almost always be a gentle one, and only very seldom sharp or hard.

This interpretative conclusion, drawn from a study of Schubert's manuscripts of all periods in his life, is certainly not revolutionary: care and thought in preparation for performances of the music have nearly always led to the same conclusions. These conclusions are also supported by an examination of the few works published during the composer's life. It is significant that in the first edition of *Winterreise* (D.911), the size of the > sign varies, often according to the length of the note or the context. Thus, in no. 17 of this cycle, "*Im Dorfe*", the accent > in the pianoforte introduction is written of moderate length and is not indicating a sharp accent.

Although Schubert's markings for his final notes are at first sight more problematic, his manuscripts seldom leave us in doubt. He asked for a *diminuendo* rather than an accent. The following examples (both for *forte* and *pianissimo* cadences), in addition to those already given, show how he indicated these *diminuendi*:—

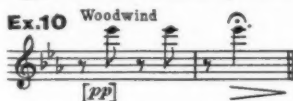
1. Symphony no. 1 (D.82), 1st movement



² The editors of the Philharmonia miniature score of the *Unfinished* Symphony have come to the same conclusion.—See previous footnote.

³ This sign is given only *over* the staff, and not for each instrument. Schubert rewrote the last cadence bars in pencil after the work's completion and dating.

2. Symphony no. 2 (D.125), 2nd movement (*Andante*)



3. Symphony no. 3 (D.200), 1st movement



4. *Unfinished* Symphony (D.759), 2nd movement



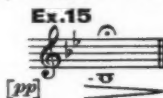
5. Great C major Symphony (D. 944), 2nd movement



6. String Quartet in D (D.94) of 1814, 1st movement



7. String Quartet in G minor (D.173), of 1815, 2nd movement



8. String Trio in B♭ (D.471) of 1816



(Unfortunately, many of the manuscripts of the chamber music works are now lost, including the string Quartet in E (D.353), the Quartet in A minor (D.804), a substantial part of the Quartet in D minor (D.810), and the Quintet in C (D.956).)

Many similar examples occur in the stage and church music. There can be no doubt that Schubert conceived these final chords with *diminuendo* effects. He was probably influenced in this by his special affection for the piano, whose tone must necessarily fade on a sustained note. This fading of tone after a cadential climax is unexpected and unusual, and occurs with such frequency in Schubert's music that it may well be called a characteristic of the composer's style.

Medtner's Sonata in G minor, op. 22

BY

HAROLD TRUSCOTT

THE single-movement sonata work is a phenomenon of the twentieth century which has, with a few exceptions, arisen for one or more of several reasons: one, an erroneous idea that there is a connection between the symphonic poem and the symphony, other than the fact that both make a symphonic use of the orchestra; two, a reaction, not as a rule reasoned, against what is viewed as the exaggerated length of such symphonies as those of Bruckner and Mahler; three, the sheer inability to manage necessary breadth and consequent length, and the attempt to hide this under the cloak of sketches linked together as one movement; and four, the rather unintelligent imitation of what is regarded as an essentially modern trend, for no other reason. The last, of course, is not a valid reason for doing anything, and only too many examples of this "one movement" trend have no other reason to offer; they simply copy other works which, whatever their strength or otherwise, were cast in this shape because their composers saw it as a necessity.

Now, I believe that there has never been a more ridiculous "rule" than that which says that a sonata or symphony *must* have four movements, and there is abundant evidence in their works that classical composers did not think so. But I believe also that the one movement structure of this kind is an abnormality or, at least, the exception, and that no composer has ever produced a genuine one movement sonata or symphony except by accident. The proof of this is contained, to a great extent, in the fact that the majority of composers, modern or not so modern, who have written works of this type have still bowed to the four movement convention—in fact, reading what is written about them and what they have themselves written and said about these works one can only gather that they are extremely proud of having kept the framework that their scheme could really only justify itself by abrogating. What such composers have really produced is simply a potted version of a four movement symphony, analogous to the potted versions of books which today abound, for the use of people who cannot be bothered to read the whole of a man's thought. In the same way, people who listen to a typical one movement symphony are getting merely a synopsis of what the work should be. This is fair enough, if that is all they want, but a synopsis has no basis for being regarded as a work of art or as anything more than an indication of what the real work might be like. And this is the point: such composers are getting away with putting out sketches for a work in place of the work itself. It is a labour-saving device, but it is also a composition-avoiding device.

Now, there are exceptions to this. Sibelius is one of them. His seventh Symphony has been responsible, in all innocence, for a good many of the works of which I am speaking, but, although I do not believe he achieved a one movement symphony in this work, I do believe that he wrote as he did because he saw it as a necessity. His scheme is in reality the same as that of Schumann's

D minor Symphony, in which four full-scale movements are played without a break—they are designed that way. Schumann was so unused to the newness of his own scheme that he could only think of describing it as a one movement work and, as far as I can ascertain, this is where the trend started. Now, Sibelius' work, although misguided on this point as to what it is achieving, is a fully rounded masterpiece, and some fine works have resulted from it, of which probably the best is Roy Harris' third Symphony. This, however, is even less sure of its one movement status than Sibelius' seventh; possibly the worst I have heard so far is Samuel Barber's first Symphony which, musically, is neither fish, fowl nor the other thing.

Each of these works pays lip service to the four movement scheme it is supposed to be avoiding, and even earlier it had become quite a habit to write works in "one movement" which were very proud of having four sections which corresponded to the four movement scheme. The reasoning on this point is extremely muddleheaded, and, indeed, such a belief is muddleheaded, and it has bred a passion for the understatement which is a serious threat to clear, concise thinking. So far has this passion for compression gone that it has become, with some critics, a sign of high praise to call a work a subtle understatement. This is, frankly, rubbish; an understatement, subtle or crude, is as wide of the mark as an overstatement, and generally far more so. I have more patience and sympathy with a composer who, to make sure that he has covered the ground, goes on too long than with one who stops too soon. If one has started something, one is bound by any artistic conscience to finish it or keep quiet about it. With the understatement composer there is always the suspicion that the work has stopped because the composer cannot handle his subject, that he cannot see what there is to be said, and indeed this is frequently true. Many a reputation for profundity has been built on the vacuous understatement.

Now, one thing that underlies all this is the fact that all creative musicians and most listeners feel the necessity in such works as the sonata and symphony for the slower, contemplative reaction to the main action; but, if this is to be accommodated in the one movement scheme, so that the work makes an organic whole as *one movement*, it must be as part of that scheme. The number of works which actually do this can be counted on less than the fingers of one hand. They are: Brahms' *Tragische Ouvertüre*, Reger's *Symphonischer Prolog* (the only two genuine one movement symphonies I know, with two borderline cases) and the main subject of this article, Medtner's G minor piano Sonata, op. 22. The two borderline cases are Sibelius' *Pohjola's Daughter*, a work which achieves the single movement sonata design on one plane with magnificent success, and which Sibelius, with unconscious irony, called a "symphonic fantasia", and Wagner's so-called *Siegfried Idyll*, which he called originally a symphony. The first work to achieve successfully the single movement design, but again on one plane and by accident, was Schubert's Quartet Movement of 1820.

Medtner himself has written a number of splendid one movement sonatas apart from the G minor, but only two are independent and on one plane: that

is to say, accomplishing a complete design without recourse to another mood as a reaction. These are the great A minor, *op.* 30, and the last of his sonatas Sonata *minacciosa*, *op.* 53, no. 2. There are others which are one plane sonata structures but they are not independent. The *Sonaten-Triad*, *op.* 11, three one movement sonatas, is actually one work, not three, and the middle one, to a motto quotation from Goethe, supplies the slower reaction, although it is not essentially a slow movement and finishes with one of Medtner's whirling rhythmic codas. Two others, Sonata *Reminiscenza* and Sonata *Tragica*, respectively open and close larger designs which are not basically sonata designs; they are a type of suite, but of a kind peculiar to Medtner, and are very large works. The material of the two sonatas is interwoven in other pieces in the suites concerned. Once and once only has Medtner produced a one movement sonata which does accommodate the contemplative reaction within the actual single movement design, and this is the only piano sonata by any composer which does it. It is closely related, in structure, to the *Tragische Ouvertüre* of Brahms, although the two works are quite independent; there is no other connection, and I would not wish to perpetuate the ridiculous notion of Medtner as a "Russian Brahms", a tag which has been all too frequently tied to him.

In a large measure, Medtner's originality is of the same order as that of Beethoven: he finds his individuality in renewing fundamentals, his newness is in what is old. This is especially true of this most unusual Sonata. It has a brief introduction, marked *tenebroso, sempre affrettando*, which gives us this theme:

Ex.1 *Tenebroso, sempre affrettando*



which, repeated a number of times on rising harmony, having in it already a suggestion of impetuosity, comes rapidly to a chordal climax marked *impeto*, and two subsiding statements of the three quavers. The main movement begins, *Allegro*, with the opening figure of the introduction:

Ex.2 *Allegro assai* ($\text{♩} = 72$)



the three quavers replaced by two chords, and a complete theme depends from this figure. Characteristic rhythms across the barlines lead to an impressive

theme of minims with a prominent dotted rhythm:

Ex. 3



forming a complete phrase with its continuation, a climactic statement of Ex. 2:

Ex. 4



making a great arc and curving down to the tonic. At this point Ex. 2 appears diminished in quavers and semiquavers;

Ex. 5



The music is marked *precipitato*, and one has the feeling that the movement is really beginning here, although this is the start of the transition passage. Everything up to this point has the overwhelming character of introduction; from here action is, in Medtner's phrase, precipitated. What the diminished version of Ex. 2 inaugurates is a variation of Ex. 2:

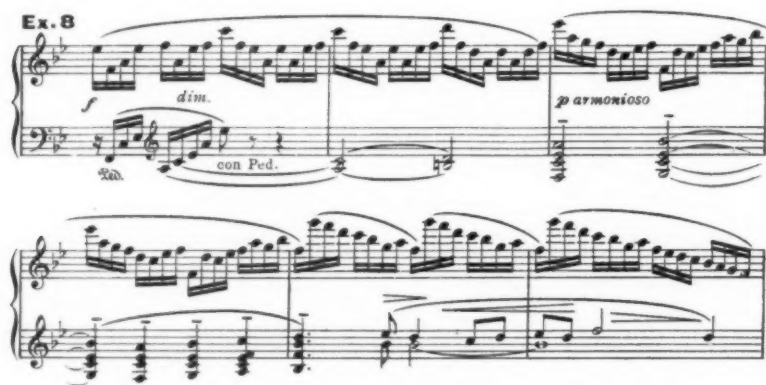
Ex. 6



in running semiquavers (much of Medtner's apparently inexhaustible material is obtained from variations of a few basic themes) and left hand chords which outline a new version of Ex. 2, so that we have two variations running concurrently. Gradually the diminished version of Ex. 2 makes itself heard in rising sequences against the semiquavers:



and, as answer, the semiquavers are augmented to quavers to make a really shattering descent from a climax, suggesting, as they do, the heavy chords which followed Ex. 2 at the beginning of the *Allegro*. A second such statement, with the quavers plainly showing their kinship with those chords, leads without a break in the flow of the music to the first theme of the second group, arising quietly, almost with a suggestion of viola tone, in thirds and then full chords in the left hand and on the dominant of B flat major, the semiquavers still continuing in the right hand:



A full-scale study of this entire passage from the beginning of the movement to this point at the beginning of the second group is one of the most valuable explorations a musician can make. If anyone has an idea of Medtner being oldfashioned and out of date because he had no use for the narrow limits which

form the extent of a good deal of what is called contemporary music, a full examination of this astonishing passage will disabuse him. Contemporary implies a state of mind, not the use of a certain type of harmony rather than another. What makes that state of mind is what the harmonies are used for; what Medtner is using his quite normal harmonies for is something as contemporary in its thought and meaning as, for example, Vaughan Williams' fourth Symphony or Bartók's fourth string Quartet, to take two examples as far removed from each other as they are both removed from Medtner's Sonata. What we have to deal with in each case is a mind with certain convictions which produce an outlook translated into music. Medtner did not like contemporary music, and said so, but this has been construed at times to mean something he did not say. He did not say that he had no sympathy with what contemporary composers were trying to say, merely that he did not like their way of trying to say it. What Medtner is saying is also contemporary in its application, and is made no less so because the mere mechanics of his utterance would not have given any trouble to musicians a hundred years ago. They would still have been puzzled by the content of this music, perhaps the more so *because* so much of its language would have been understandable.

The theme now played in B flat is short—two phrases with echoes, and the second echo brings the three quavers from Ex. 1, now filled out with semi-quavers, climbing in overlaps to make an extended version of the short *tenebroso* introduction. This culminates in Ex. 2 played in such a way as to show that the B flat theme, while not precisely a variation, has strong affinities with that generative theme:

Ex. 9 *poco à poco svegliando*

The musical score for Ex. 9 is written for piano and right hand. It begins with a piano (pp) dynamic and a tempo instruction of *poco à poco svegliando*. The first system shows a melodic line in the right hand and a supporting bass line in the left hand. The second system continues the melodic development, marked with a crescendo (*cresc.*) and ending with a piano (*p*) dynamic and the instruction *cacciato*. The third system features a more complex texture with chords in the right hand and a moving bass line, marked with a forte (*D*) dynamic and the instruction *resoluto*.

From this the chords which followed Ex. 2 stride in a massive *crescendo* and answering *diminuendo* to the dominant of D minor, asserting that note for three and a half bars. Here begins the second and larger part of the second group, and the largest part of the whole exposition, with a theme made of the three initial quavers and a corollary new in this movement but not in Medtner's music:

Ex. 10 *con timidezza, ma a tempo*

p
senza Pedale

The character of this music is hesitant, with a most imaginative use of the expressive comma, but the harmony swings round to F and the music gains confidence as it moves on to a diminished version, in crotchets, of Ex. 3, silent since the opening of the *Allegro*:

Ex. 11 *diminuendo*

dim.
dim.

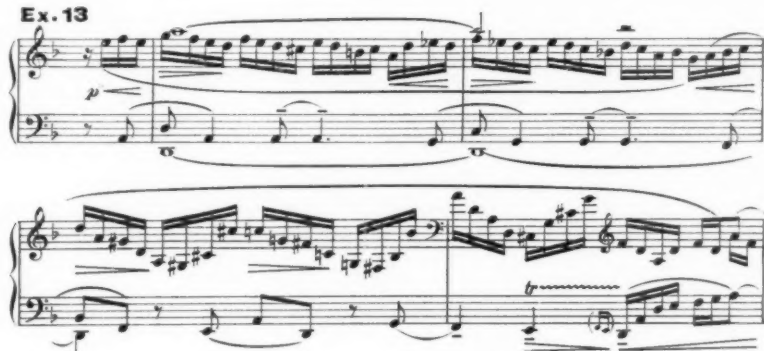
This theme builds gradually the biggest climax we have had so far, the reaction being the D minor theme which began this second part of the second group, and the new corollary shows its power of making tension by overlaps:

Ex. 12 *cresc.*

cresc.
p

A remarkably free and quietly running passage ensues, combining Ex. 6 with the three quavers:

Ex. 13



With great breadth of quiet rumination Ex. 13 ends this huge three-tier exposition.

The development begins with Ex. 8:

Ex. 14



joined to the latter part of Ex. 2 in thirds, and a sudden eruption of Ex. 2 in its most forceful version brings Ex. 11 and an extended form of the climax which previously grew from this, in agitated triplets, and moves on with cataclysmic force to the short introduction, now on F minor, and with triplets whirling furiously high in the right hand. The music subsides on the three quavers into the second part of the development, the slow movement of the work.

In this, Ex. 2 receives magical new power and meaning:

Ex.15 *Andante lugubre* ($\text{♩} = 42$)

The whole of this wonderful *Andante* reconceives entirely the bulk of the basic material we have so far heard, reconstituting it and making quite different and inevitable long paragraphs from it, as when Ex. 2 is joined with Ex. 11 (Ex. 3) to make a new theme of infinite consolation, Ex. 11 having its elements in completely new order:

Ex.16 *Poco a poco più sereno e con moto* ($\text{♩} = 56-72$)

inaugurating a huge sentence in which Ex. 11 is heard thus:

Ex.17

building up:

Ex.18

Ex. 18

f risoluto e affrettando

to this ultimate central core, in which expressive power is at once pared down to essentials and raised to a tremendous degree of prepared eloquence:

Ex.19 Maestoso

Ex. 19 Maestoso

f risonante

ff fastosamente

ms. S. Len.

Every note moves as part of an organic spontaneous design in which freedom and control are co-partners.

The first part of the *Andante* is resumed, from the dominant of F minor and comes to an end in which Ex. 2 is echoed and re-echoed, tapering off to a *pianissimo* fade-out. After a pause the recapitulation breaks out, *piano*, in an A minor which slides off quite naturally from the previous F major chord. Ex. 2 is heard as at the beginning of the *Allegro*, with the semiquavers of Ex. 6, followed by the quaver version of Ex. 7. This version receives a measure of development, the semiquavers forming a kind of *moto perpetuo*, and the diminished Ex. 2 of Ex. 5 appears, leading the music gradually through the original transition passage to Ex. 8, arising now from the dominant of G major. From here the whole of the two-part second group is recapitulated, the large second part now in a fully established C minor, until we arrive at the overlaps of Ex. 12. The ruminating passage to which Ex. 12 gave rise, and which ended the exposition, does not follow. What Ex. 12 now leads to is Ex. 2 back in G minor, and a full-throated statement of Ex. 3, which was omitted in its appropriate place in the recapitulation of the first group; it gains yet new force by the association with it of the predominant double-dotted rhythm of Ex. 2:



The reaction is a huge coda, in which the diminished version of Ex. 2 first heard in Ex. 5 combines with the right hand theme from the latter part of Ex. 4 in a triplet rhythm to make a steadily growing pendulum swing:



This culminates in the end of the Sonata, which is the chordal climax of the slow introduction.

This Sonata is one of the outstandingly original large-scale twentieth-century achievements in music. Its handling of every aspect of its language is bold with the assurance of genius. Its language is that of Medtner's classical and romantic predecessors, but at every point he is doing with the certainty of

complete achievement things which had never been done in this field before, and he is using these things as the right and natural means of expressing what he has to say. The unity of the whole structure is evident at a single hearing, a statement of which I have had ample proof. The unusual features which help to make that structure give the work a permanence one only, as a rule, associates with the tried classics. This music is outside fashion; it will always be there, and will always be ready to yield a little more of its secret. But it will never have given everything.

The huge natural sweep of the three-tier exposition (which has a precedent in the finale of Clementi's G minor Sonata, *op.* 34, no. 2) is only part of the tonality of the whole, an essential part of the expressive power of this music. In addition to the G minor, B flat, D minor of the exposition, there is the F minor of the slow part of the development, the A minor of the recapitulated first group, the G major and C minor of the recapitulated second group, all of them fully-established keys. We have, in other words, every step of the downward melodic minor scale except the submediant as a fully-established key, in this amazingly brief but balanced one movement Sonata, and nothing that is broached is left unaccounted for. The richness of the texture, achieved by great ramifications of a few brief themes, is balanced by an equal and simultaneous austerity. We even have a casual melodic phrase (end of Ex. 4) assuming an important function in the coda.

That such a style breathes counterpoint as its natural element is what one would expect, but it is counterpoint at every turn subservient to the dramatic direction and swing of the whole, and nowhere draws attention to itself as an end. Medtner's genius found many other ways of expressing what he had to say in many other works, large and small, but nowhere did all essential elements fuse more perfectly into a finished utterance in which everything contributes its due weight and no more to the whole. When what one seeks is the right thing and when, as here, the old yields the new, satisfaction is complete, originality assured.

An Introduction to the Music of Roman Vlad

BY

RONALD STEVENSON

ROMAN VLAD is known in Britain for some penetrating articles contributed to *The Score* and to *Horizon* and for his stimulating seminars at the Summer School of Music, Dartington Hall. In Italy, his adopted country, at 41 he is already a name to be reckoned with as a composer.

One of his best articles is entitled "Busoni's Destiny". However unfashionable destinies may be, Vlad has one also. Born in 1919 in Czernowitz, Rumania, in 1938 he settled in Rome. It is rather curious that the Italian for Rumania is *Romania*. In 1950 Vlad was naturalized and became Roman in deed as well as in name.

At 18 he enrolled at Rome University and at the Accademia Nazionale di Santa Cecilia studied composition and piano with Alfredo Casella. In 1941 he gained the master class diploma in piano. Since then, like a true contrapuntist, he has engaged in five concurrent careers: composer, pianist, critic, teacher and lecturer—the five species in one! He is perhaps the most energetic musician of my acquaintance. In recent years he has represented Italy on the panel of the I.S.C.M. and in 1955 was nominated Artistic Director of the Accademia Filarmonica Romana. Not the least of his services to the art has been his promotion of many concerts of contemporary music at the Teatro Eliseo, Rome.

His public appearances as pianist have been few of late, though I believe he gave a brilliant account of his *Variazioni Concertanti* for piano and orchestra at the Venice Festival of 1955.

As a critic, apart from numerous articles in music magazines from various countries, he has published three substantial books, *Modernità e Tradizione nella Musica Contemporanea* (Einaudi, Milan, 1955), *Storia della Dodecafonia* (Suvini Zerboni, Milan, 1958), *Stravinsky** (Einaudi, 1958) and *Dallapiccola*, an opusculum in English (Suvini Zerboni, 1957).

I reviewed *Modernità e Tradizione* in *The Chesterian*, vol. XXXI, no. 190, Spring, 1957. Here a brief reference must suffice. The chapter on Chopin is perhaps the best example of Vlad's critical acumen. In it he makes some genuine discoveries: he finds Scriabin's famous "synthetic" chord of superimposed 4ths in bar 6 of Chopin's *Etude* in C minor, *op.* 25, no. 12, and "grafted bitonality" in bars 19–20 of Chopin's *Berceuse* (the scale of C in a D flat context).

The opusculum on Dallapiccola consolidates Vlad's reputation as the outstanding authority on the subject; his *History of Dodecaphony* achieves greater comprehensiveness than the previous writings of Leibowitz, Rognoni or Rufer; and his book on Stravinsky is a unique commentary on that composer's *opera omnia* (vide my review in *THE MUSIC REVIEW*, vol. 20, no. 1, Feb. 1959, pp. 80–82).

* Also published in English with new material (Oxford U.P.) 1960. [Ed.]

It is Vlad the composer of whom I wish to write here. In that role his meteoric rise secured him a contract with the Milanese publisher, Suvini Zerbini, and, despite a plethora of other activities, his output has steadily increased.

His *Divertimento per 11 strumenti* has been published in Britain by Boosey and Hawkes. As this is the only score readily available in Britain, it could easily convey an inadequate impression of the composer. It is a light-weight piece, a *jeu d'esprit*, certainly expressing one side of Vlad's nature—the Latin aspect—but not even hinting at the substratum of philosophy that underlies the stream of his music. The geniality and candour of Vlad's personality, that so enlivened his visits to Dartington, hardly suggest his penetrating powers as a musical thinker. But the handful of Summer School students who were privileged to hear his discourse on "Metaphysical Elements in Schönberg's Poetic" were afforded a glimpse into the workings of an original mind. Like Browning's Galuppi, Roman Vlad is "good alike at grave and gay".

Here I shall comment on a representative group of five of Vlad's compositions written between 1948 and 1955. All except the *Divertimento* are published by Suvini Zerbini.

Divertimento per 11 strumenti

In 1948 Radio Italiana commissioned five works for chamber orchestra. Malipiero wrote *Mondi celesti* (with voice), Milhaud *Apothéose de Molière*, Petrassi the *Sonata da Camera*, and Vlad wrote this *Divertimento* which Hans Keller has epitomised as the "Apotheosis of the Diminished Seventh". It is scored for single woodwind, harpsichord, 2 violins, 2 violas, 1 cello and 1 double bass, and is in 3 movements: sonata, theme and variations and rondo. The whole work is based on the diminished 7th and the two interlocked tritones which it contains. These elements are first presented melodically, then developed harmonically and contrapuntally, until in the last pages they become crystallised in one chord, fusing C major and F sharp major triads—yet another ramification of the famous passage in Stravinsky's *Petrushka*.

The harmonic nucleus of the first page is two diminished 7th chords a semitone apart. This semitone relationship is another pervading factor. In the first movement's recapitulation it produces a fusion of oboe and clarinet on a semitone, with a soft harpsichord *tremolo* helping to create the acoustic illusion of a quartertone. The sonata displays typically classical formulae, such as the Alberti bass, *roulades* and colloquies of woodwind. It is the harmonic setting that makes the thing fresh. The scales which interlace the music with strands of subtly shifting colour have their historical precedent in the scalic passages used by Mozart in the statue scene from *Don Giovanni*.

The whole *Divertimento* propels a Latin breeze and nowhere does it blow so freshly as in the second movement, the theme and variations. The theme is a supplication of suppressed passion, *tempo* fluctuating with mood. There are five variations: march, waltz, galop, *ostinato* and *largo*. In the march, the bemused spirit of Rossini indulges in mock militarism, brought off with great panache. In the waltz and galop, Stendhal joins Rossini and arm-in-arm they

deploy themselves in dancing to Chopin's harpsichord accompaniment. It is music that plays tricks with time—not the tricks of *rubato* but of anachronism: it winks at the past, accepts the present, and hints at the future. The *ostinato* has some frankly bitonal passages with violins and *flatterzunge* flute not pretending to harmonise in consecutive semitones. The *largo* solemnises the proceedings and recalls the theme in *tutti*.

The rondo subject, like other elements in the *Divertimento*, has a Mozartian source in the *fugato* of the *Zauberflöte* Overture, which itself was based on a theme from a Clementi sonata. And so we get back to Italy.

Vlad's predilection for the diminished 7th chord, exemplified in the *Divertimento*, is related to the Italian way of thinking of all music, for whatever medium, as potentially operatic. It could be argued that Mozart often thought operatically in his quartets or concertos. As the diminished 7th appears elsewhere in Vlad's music, a word on his use of it may be apposite. The fascination that this chord exercises on Vlad is not to be explained away as an "obsession". Comparable to the frequent employment of the added 6th in the music of Delius or Messiaen, Vlad's diminished 7th declares his freedom from harmonic inhibition. He is emphatically not one of those timid souls who persuade themselves that they can write "up-to-date" music by strict avoidance of musical platitudes. Vlad knows that sliding chromaticism can be mysterious as well as maudlin; a common chord magical as well as prosaic; that when a sixth is added to a triad, the result need not be a mere cloying mixture, for he also knows, like the Abt Vogler, that out of three sounds may be framed, not a fourth sound, but a star. The diminished 7th chord is the cipher of the dramatic in Vlad's music, but its ambivalent enharmonic nature and structural symmetry contribute as much to the music's form as to its emotional content.

Storia d'una Mamma: racconto musicale in un atto.

Whereas the *Divertimento* was all brightness, with the one-act opera *Storia d'una Mamma* we begin to see the obverse of Vlad's coin.

The libretto by Gastone di Venezia is based on a fairy tale by Hans Andersen. The "*Dormi Jesu*" from *Des Knaben Wunderhorn* and a short poem by Giovanna Naldi are also utilized. There is only one singer, the mother, the other *dramatis personae* being mimed or danced. A spoken recitative, conceived for broadcasting, is incorporated in the score but is dispensable in theatre or concert hall, where action and scene compensate.

This is the story:

One winter's night, a mother keeps vigil, singing to her sick child. She fears he may die.

Someone knocks. The mother bids enter an old man covered in snow. She offers hospitality but falls asleep, singing a lullaby. The old man steals the child.

The mother awakes. Desperate, she rushes out. In a snowstorm, Night, an old woman in black, promises to show the way if the mother will sing a lullaby. She must find a forest of firs, in the heart of which stands a barren briarbush at a crossroad.

This briarbush promises to show the way if the mother will sing lullabies and melt his icicles by warming him on her bosom. She obeys and the thorns pierce her. The bush burgeons in midwinter and commands her to find a lake.

The lake promises to show the way if the mother will weep away her eyes. They become pearls in the water.

Then she is lifted up and set down on the far shore, where the Garden of Death stretches for miles. The Old Woman of the Tomb keeps vigil. She promises to show the way if the mother will exchange her black plaits for the old woman's white hair. She escorts the blind mother into the garden and explains how the flowers are really human beings. The mother stoops and, among a million heartbeats, recognizes that of her infant in a tiny drooping crocus. The old woman warns the mother not to touch the flower, and, when Death arrives, she must not let him touch it either.

Death comes. The mother threatens to uproot two flowers if he refuses to restore her child. Death has found the two pearls in the lake and restores the mother's sight. In the lake's crystal, he reveals two destinies identified with the two flowers: one blessed, one cursed. The mother prays that her infant may be blessed and would rather Death take him than the child should live accursed. Death uproots the little flower and bears it away to the unknown country.

The story's symbolism is intimately connected with the music of the opera: indeed, the two exist in a symbiotic relationship.

Death appears at the beginning and end of the story and in both places the tonal centre is clearly defined. The composer's direction for the singing flower-garden—*quasi con magica fissità* (fixity)—is equally applicable to tonality and expression. On the other hand, the music for the mother's quest borders on atonality and one of the *berceuses* is marked *molto intenso, quasi "espressionisticamente"*.

The snowstorm is equated—not represented—by *canon perpetuus*. A fantastic geometry motivates both. And the *Ursymbol* of the lake is equated in mirrored canon cancrizans.

In the *berceuse* "*Dormi Jesu*" the reflected image of Christ in the child has its musical counterpart in the reflections of two triads of E flat and A major. The song opens with the E flat chord as a pedal-point and the chord of A above like distant harmonics, and closes with the pedal on the chord of A with the E flat chord above, completing the circle. The song is a kind of seer's crystal in music, reflecting harmonic images; a minuscule "music of the spheres".

The structure of the opera is columniform. Eight ariettas sung by the mother are separated by spoken recitative, some of which is against a contrapuntal orchestral background. The mother's last arietta is preceded and followed by choruses: first, the chorus of flowers; the last, of angels.

Storia d'una Mamma is dedicated to the composer's mother.

The most significant feature of the opera in relation to Vlad's development as a composer is the *canon perpetuus in motu perpetuo* that accompanies the final appearance of Death, because this canon was to be utilized in two successive works, the *Elegies* and the Cantata *Le Ciel est Vide*.

5 *Elegie su testi biblici: per voce e orchestra d'archi.*

The *Elegies* and the Cantata were conceived from the same fundamental ideas: on the philosophico-literary plane, the idea of profound pessimism; on the musical plane, the idea of strict "classical" twelve-tone technique. Vlad's first essay in what is somewhat loosely termed "dodecaphony" was a set of piano studies composed during the war. After those pieces, he forsook the

idiom for a while, electing to write in a pan-chromatic vocabulary. The Elegies and the Cantata again show him grappling with the problems of twelve-tone composition.

Technically, the Elegies are of classical severity. Monody participates extensively in the score. The orchestra too is monochrome (strings only) and for long stretches also consists of only one part. This monodic element demands, in the interests of variety, a deviation from the classical twelve-tone practice of basing a whole work on one series. This five-movement work is based on four different tone-rows, a different one for each of the first three movements, and the same one for the last two movements, this last row also being used in the Cantata.

In his article on Dallapiccola contributed to *The Score*, March 1956, Vlad cites "a curious example of independent parallel creation", referring to his own Cantata (he might also have included the Elegies) and the sixth *Lied* from Dallapiccola's *Goethe-Lieder* for mezzo soprano and three clarinets. Both works have a common twelve-tone series. At the time of their composition, Vlad was on the Greek Island of Lemnos and Dallapiccola was in America. It is noteworthy that Vlad characterizes the Dallapiccola song as expressing "claustrophobia and inward oppression" and demonstrates the construction of the tone-row in question as containing the "closest" intervals in the semitonal system, the minor and major seconds, evidently identifying the close interval with claustrophobia. This passage of Vlad's on Dallapiccola is fundamental to the understanding of Vlad's own Elegies and his Cantata.

The text of the Elegies is drawn from the Vulgate, mainly from *The Book of Job*. The *Psalms*, *Ecclesiastes* and *Genesis* are also drawn upon. The composer has chosen his texts with great appropriateness. This is evident in the 4th Elegy, which is significant because it is precisely here that Vlad begins to use the tone-row which also occurs in the Cantata and which Dallapiccola used in his *Goethe-Lieder*. Each of the first four lines of the 4th Elegy is taken from a different page of the Bible and yet these lines are chosen so well that they sound consecutive. They are: *Quid est homo?* (*Job*. VII 17), *Quis est Deus?* (*Job* XXI 15), *Quid est? quod fuit?* (*Ecclesiastes* I 9), *Quid enim novit Deus?* (*Job* XXII 13). The music set to these words reappears in the Cantata at the words: *Vater, wo bist Du?* In the one-act opera, the same *materia musica* was used for Death's enigma of the two destinies. Following the opening of the 4th Elegy, the string orchestra is treated in the pointillist manner that recurs in the Cantata, though there it is considerably developed because of the more ample resources of a large orchestra.

In these Elegies the treatment of the vocal line suggests the ancient Hebrew cantillation rather than the Catholic plainsong; that is to say, it is rhapsodic and impassioned rather than meditative and serene, and moves by leap rather than by step, sometimes in augmented or diminished intervals suggestive of an indefinable atavistic orientalism.

The Elegies are dedicated to the composer's wife. Perhaps we may here pay tribute to her devotion to him. An archaeologist, she is, like her husband, profoundly interested by philosophical and religious problems.

These Elegies stand in their own right but their importance in Vlad's output is considerably increased when they are considered as preparatory studies for the large Cantata. The 5th Elegy, a *canon perpetuus* that has its source in the opera *Storia d'una Mamma*, is transplanted bodily into the central movement of the Cantata. As if in visible token of the inner *nexus* linking the Elegies with the Cantata, the last Elegy has no bar-line at its close. In a sense it has no close, for, as the canonic voices are reduced one by one, it is as though the music gradually recedes from earshot and, reaching beyond the "time-barrier", goes on in the continuum.¹

Cantata: Le Ciel est Vide: per coro misto e orchestra.

The work can be performed either with the German text of Jean Paul Richter or its French translation by Gérard de Nerval. Perhaps the best English rendering of the title would be "The Heavens are Empty".

A three-bar motto (*andante mosso*) prefaces the Cantata. Immediately the spirit of negation, which broods over the whole work is conveyed in one spoken word: *Nein*. This is accompanied by a *secco* chord for horns, woodwind and *pizzicato*. Then silence. Chorus and strings present the statement *es ist kein Gott* ("there is no God") in awesome octaves, the word *Gott* treated climactically in a *tremolo tutti*.

Part I proper commences with the orchestra in canonic *ostinato* on this subject:



which presents the *Urmotiv* (the first three notes) together with its transposed retrograde and inversion and retrograde inversion; the last six notes being a transposed inversion of the first six. In choosing this subject and treating it immediately in *stretto*, Vlad sets himself a challenging task. He has so concentrated his initial material that its development demands considerable ingenuity. The confidence with which Vlad responds to this challenge indicates his mastery.

On this theme is spun a delicate contrapuntal network, the bass in augmentation. The choir enters pointillistically, a different voice to each syllable. This facilitates a melody of wide pitch-range. The singing first proceeds in semibreves and this rhythm is only gradually accelerated. It is as though the

¹ Compare with what Vlad writes on Roberto Gerhard's string Quartet on p. 32 of *The Score* No. 17, September, 1956. (Vlad's Elegies were composed before Gerhard's Quartet.)

acceleration generates heat which solders the contrapuntal strands into formidable blocks of harmony. With this the motto is reiterated:

Ex.2 A - ber es ist kein Gott!

The latent diminished 7th and major-minor dichotomy implied in Ex. 1 now becomes apparent. The words are repeated to an inversion of the phrase, as if to show that, wherever God is sought, in the heights or depths, the answer of negation is inexorable. It is shouted a third time before the music abates exhausted.

The second section of Part I (*andante ma non troppo lento*) opens like a night sky sowing stars. Different instruments sound singly, points of sound like points of light; a pallid music of the spheres. This pointillist orchestration shows much ingenuity, not only in the choice of instruments employed, but in the manner in which they are employed. Within a few bars the treatment of the strings embraces *normale*, *armonici*, *tremolo*, *sul ponticello*, *col legno* and *pizzicato*. And imagination is added to ingenuity. Whilst the orchestra explores the sad heights, the choir bewails the descent into Hades. This creates an interior drama of its own. The cries are intensified, keeping the listener expectant, waiting to hear a still more shattering cry. Yet, when the climax comes, it is the most distant whisper of a single voice from the *a capella* choir: *Vater, wo bist Du?* ("Father, where art Thou?") This is the heart of the work. Single voices are gradually added to the solo voice, until the whole choir is asking the soul-searching question. Then each section of the choir is divided into six parts. This creates a feeling of outer distances.

A sudden orchestral *tutti* (*allegro furioso*) drowns the question like a deluge. The tempo slackens at *Ich hörte nur den ewigen Sturm* ("I heard only the eternal storm"). There is an added touch of drama in the choral writing: the tenors are divided into two parts, vocalizing in imitation on the "o" vowel, and against this moaning background the rest of the choir sings the words. The score is gradually lightened to *ostinato* woodwind accompanied by string *tremolando*. A coalescence of tonalities (A flat with major 7th and B flat major-minor) ensues at the words: *Und der Regenbogen stand ohne eine Sonne* ("and the rainbow stands without a sun"). A battery of percussion is brought into action and the orchestral mass surges up into a whirling vortex. This climax subsides slowly with the superb aural image of the rainbow drooping down into the abyss. A great arc is drawn by the descending 3rds of the sopranos and continued by the slow-falling 4ths of the basses. Annihilation seems inevitable, yet a soft chord on trombones, piano and harp hangs like a breath on the air, the chorus enters speaking, with all the awesome solemnity of a Greek play, and we hear the words like the ghost of a breath: *Der schimmernde Regenbogen aus Westen*

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("the shimmering rainbow from the west"). We almost glimpse a promised paradise in this moment of transcendental insight. But the picture fades. Finally, the inevitable annihilation. The opening motto returns and is repeated again and again in hopeless yearning:²

Ex.3 Grave

A - ber es ist kein Gott — A - ber es ist kein Gott, es

(T Sva below S; B Sva below A)

ist kein Gott, es ist kein Gott, — kein Gott —

The word *Gott* vanishes into the infinite. A soft chord on harp, piano and low winds; and above, string harmonics shimmer like the last pale diaphanous image of the rainbow. The orchestration is gradually reduced until one deep note on the double bass stands isolated as a final symbol of spiritual desolation.

The following bar's silence is an integral part of the work. Part II hardly interrupts it but grows out of it. The percussion instruments of indefinite pitch—the *tam-tam grande*, the *gran cassa* and the *cassa rullante*—follow in that order, each part in successive diminution and each comprising six notes identified unmistakably with the six-syllable motto: *Aber es ist kein Gott*. The first timpanist takes the fourth entry, adding the element of definite pitch; and the second timpanist adds his roll to the first, forming a major 7th with it. The gradual piling-up of definite upon indefinite pitch, of volume and acceleration, works like some kinetic force imparting a new motion to the music.

Above the percussion rolls, *divisi* strings enter *pp* in a 24-part *canon perpetuus* on the subject of Ex. 1 transposed to G sharp in triplet semiquavers. The chromatic shiftings, the subtle pitch differentiations, add another new element to the monotone of the percussion. The following 240 bars in $\frac{2}{4}$ consist of a single reiterated chord—surely the most sustained chord in the whole of musical literature! This chord is repeatedly unravelled by the 24 canonic parts, like the untying of some curious knot. Vlad himself says in his preface (original in Italian):

The frictions of these notes are dissociated from the sonorous texture and reduce it to an undifferentiated "cushion of sound": the maximum structural polymorphism is thus translated into absolute amorphism, symbolizing "Chaos, shadow of nothing".

Against this background, the chorus tells of seeking through the immense universe for the eye of God, but nowhere seeing it. The different bodies of the orchestra are set gyrating within the predetermined orbit of the canonic subject,

² The quoted passage is based on the idea of symmetrical inversion, first formulated by Bernhard Ziehn (1845-1912) in his *Canonische Studien* (Verlag Kaun, Milwaukee and Berlin, 1912).

first the woodwind in trills, then the brass in close 12-part imitation on an augmentation of the subject. The "sounding brass" vividly recalls Saint Paul's *caritas* quotation and is reserved for the culminating cry of *Gott ist nicht*, though even there the brass is kept *sempre pp*, utterly impassive, even when the cries from the chorus sound enough to bring down the walls of Jericho. A sustained *diminuendo* and gradual reduction in scoring seem to carry the assertion of God's non-existence into the farthest distances, to reduce it to the nothingness of which it speaks. Once again we are left with a single deep note, this time the *Sprechgesang* of the bass voices, which is finally consumed in the sudden *fortissimo* violence of percussion, presenting the retrograde of the movement's opening bars and thus dissolving into the silence whence it came.

The choral writing in this movement is as varied as the orchestral scoring was in the first movement. The various sections comprise: *parlato* (*sotto voce* and *con voce alta*); *cantando*—sometimes with open, sometimes with closed mouth, some sung phrases beginning and ending in humming and seeming to well up out of silence and to sink back into it; *vocalizzando*—to the vowel "o" as a mournful background or the vowel "a" to suggest wonder; and finally *Sprechgesang* at the dynamic climax.

Of Part III (*adagio—andante mosso e molto agitato*) the composer's prefatory note says:

In contrast to the chaotic *perpetuum mobile* of the second movement, there is the immobile fixity from which the last movement seems to be born and into which it finally dissolves.

The words *Starres, Stummes, Nichts* ("dumb numb nothingness") are intoned down the stations of the choir, from soprano to bass. The *a capella* choral writing is bare and stark. The rhythm is viscous, moving reluctantly in unvaried crotchets at the words *kalte ewige Notwendigkeit* ("cold eternal necessity"). Here the basic set is permuted and its four segments welded together in scalic rearrangements. A 15-bar *quasi corale* is built round the words *Wahnsinniger Zufall* ("crazed chance") and the viscous crotchet movement coagulates in heavy minims.

The orchestra is introduced very quietly. The four serial segments are presented successively by clarinet, 2 violins, piano and piccolo, above a *tremolando* background of strings, vibraphone, harp and xylophone. An extended orchestral *stretto* exploits various canonic developments of the four segments. On the choir's entry the *tempo* accelerates with the restatement of *Wahnsinniger Zufall*. There is a long development of the basic set, 2nds now being inverted and stretched into 7ths and 9ths. The choir is treated unmercifully, each part kept at breaking-point of *tessitura*, until the climax is very gradually reached. Then a brief *allargando* and the orchestra reinstates the chorale idea. *Tremoli* shimmer and the long scalic strands permuted from the theme weave across the choir as it again contemplates spiritual desolation.

Another chorale-like section of wounding poignancy recalls earlier questionings with its *O Vater, Vater wo ist Deine unendliche Brust?* ("O Father, Father,

where is Thine Infinite Bosom?") The choir is reduced by half. A great tremulous arc of sound is circumscribed from soprano down to bass to the words *In ewiger Mitternacht ist keine heilende Hand* ("in eternal midnight is no healing hand"). This recalls the earlier rainbow image. Reminiscence suggests valediction. The choir is reduced to a quarter—*kein Vater!*—then only four singers, then two, then one—*allein, allein*.

The Cantata requires a chorus of at least 80 (20 per part). In addition to the normal orchestra, it specifies 2 piccolos (also taking 3rd and 4th flutes), cor anglais, bass clarinet, double bassoon, 3rd and 4th trumpets, harp, piano, vibraphone, xylophone, celesta, and an array of percussion. This Straussian *grosses Orchester* is treated in a most un-Straussian manner. Rather is the scoring in the line of Mahler. The orchestral palette displays an uncommon variety of tone-colours, but the use of them is governed by a nice sense of selection.

In Part I (40 pages) *tutti* occurs only three times, twice on the word *Gott* and once on *Du*; and only for one chord in each case.

In Part II (29 pages) *tutti* occurs once only, again on the word *Gott* and only for one bar.

In Part III (31 pages) there are a dozen pages of *tutti*.

It would be erroneous to classify this Cantata as an ultra-modern work bearing little or no relation to tradition. The title of Vlad's book *Modernità e Tradizione nella Musica Contemporanea* rehearses his artistic credo, which is apparent on every page of this score. Vlad's choral pointillism is directly descended from *ochetto* in mediaeval music; his *canon perpetuus* à 24, with its repeated unravelling of the knotted 12-note chord, is the legitimate heir to the *enimmes* of the fifteenth-century Netherlands School; and his complex rhythms are extensions of the old *emilia* principles of musical proportion.

His sense of proportion is architectonic. It is no accident that the 12 notes of the Cantata's basic set are translated into a time-scale of harmonic rhythm based on 12 as its common factor. For example, in the first movement the choir is divided into 24 parts singing chords of 12 notes. Again, in the second movement the strings are divided into 24 parts (7: 7: 6: 4) interweaving within the 12-note chord; and it is not for nothing that this *canon perpetuus* lasts for 240 bars. The listener may be unaware of these things, but that does not mean that they are not contributory factors to the unity and indeed to the dramatic effect of the work. For, as every actor knows, counting is the art of timing which is the secret of the telling gesture. And Vlad's Cantata is eloquent with telling gestures.

The work exists in the same spiritual No-man's-land as the paintings of Francis Bacon and the plays of Samuel Beckett. The justification of setting a nineteenth-century poem to music that belongs unmistakably to the twentieth century is explained by Jean Paul's capacity for creative vision, which his translator, Gérard de Nerval, shared; and by the fact that these two poets, like Büchner in his *Wozzeck*, projected their thought into our century. Their work is still valid.

Vlad's score of this 100-page Cantata constitutes his most considerable achievement to date. It is dedicated to the senior Italian music critic and editor of *La Rassegna Musicale*, Signor Guido Maria Gatti.

Variazioni Concertanti per pianoforte e orchestra: sopra una serie di dodici note. dal Don Giovanni, di Mozart.

This work consists of twelve variations on the twelve-tone series unearthed by Darius Milhaud in his study of the statue scene from *Don Giovanni*. The structural plan of this work of Vlad is built on an *emoliola* principle of following two slow variations by three quick ones, repeating that order and completing the composition with two more slow variations. This plan produces variety and symmetry.

The music is based not only on Mozart's twelve-tone series but on the rhythmic ideas stated in the opening bars of the *Don Giovanni* Overture. In fact, the beginning of Vlad's Variations is identical with the opening of Mozart's Overture, except that Vlad has embodied the twelve-tone series in Mozart's harmony. This conveys what we might call a "surrealist" effect (though one uses the term with the understanding that Vlad is certainly not the sort of composer who can be said to belong to one particular school; and, in any case, I am not aware that there has been a "surrealist" school of composers).

As the tone-row is embodied in the quoted overture, so the *Non si pasce* theme is incorporated in the first variation, instead of prefacing it; and on the theme's appearance, or rather emergence from the sonorous mass in which it was previously embodied, it is immediately treated in *stretto*.

There is some lovely melodic writing in the central variations. The series now becomes disembodied in an ecstatic lyricism.

The 10th variation scintillates with a quotation from the Don's "Champagne" aria, and this also is related to the *Non si pasce* series.

The penultimate variation is an apotheosis of the first. The fundamental drama implied by the chords of tonic and dominant in Mozart's Overture is now intensified to breaking-point by extreme dissonance and the pitting of the piano against the orchestra. This variation stands in the same relation to the whole work as does the symphonic epilogue (the "Invention on a key") in Berg's *Wozzeck*. Each is a summing-up of the dramatic content of the entire work. When one realizes that they are both "inventions" on the same key of D minor, one wonders if Berg's epilogue did not influence Vlad.

The Dantesque D minor of the statue scene in *Don Giovanni*—Dantesque because of its unmistakable echo of "abandon hope, all ye who enter in" and because of its superb gesture of scorn—is related to the extreme anguish of Vlad's 5 Elegies and of his Cantata.

But at the end of the Variations the last word is not with grief. Here the demoniac is transformed into the angelic. It is as though a new innocence has been attained through the refining fires of experience. Vlad quotes the trio theme from the *andante* of Mozart's 11th piano Sonata; thus reflecting the

microcosm of Mozart's chamber music in the macrocosm of his operas. The music becomes transformed almost as if by an alchemical change:

Ex. 4 Calmo, con estrema, seppur contenuta emozione



When the music began it was Mozart. It was and is not. Vlad has made it completely his own.

The quotations from music by Vlad are made by kind permission of Messrs. Suvini Zerboni, Milan.

Hindemith the System Builder: a Critique of his Theory of Harmony

BY

VICTOR LANDAU

DURING his Yale period it was difficult to discuss Hindemith's theories with any degree of objectivity. Those who were under his spell did not separate Hindemith the teacher from Hindemith the theorist, and credited the latter with the excellence of the former. On the other hand, some critics of his theories, such as Norman Cazden,¹ were perhaps more devastating than necessary in an effort to counteract the sanction which Hindemith's prestige lent to his theories. But now that Hindemith has withdrawn from the educational arena, at least temporarily, and the heat of partisanship has somewhat lessened, it should be possible to examine his system solely as a body of theory, without polemics or adulation.

Hindemith's theory of harmony is founded on the proposition that tonal relations have their basis in nature, which he conceives broadly to include abstract numbers as well as acoustical phenomena and the physiology of the ear. Nature's laws are immutable, he writes; they cannot be revised by history or the arts of man, and they govern the music of all periods and styles. With this in mind he has endeavoured to formulate theoretical principles which are universally valid and applicable.²

It is rather surprising that composer Hindemith leans so heavily on nature as a basis for his theories, whereas the scientist Helmholtz, writing in 1875, stressed aesthetic factors: "In Nature we find not only beauty but ugliness, not only help but hurt. Hence the mere proof that anything is natural does not suffice to justify it aesthetically".³ If Helmholtz were alive today, he might not argue with Hindemith's assumption of fixed natural laws, but he would deny, perhaps, that these laws alone govern harmonic relationships. He believed that "the system of scales, modes, and harmonic tissues does not rest solely upon unalterable laws, but is also, at least partly, the result of aesthetical principles, which have already changed, and will further change with the progressive development of humanity".⁴

Cazden, in his article, directs his fire not so much at Hindemith's dependence on nature but at his supposed failure to apprehend her laws, his convenient abandonment of her, and his preoccupation with both conservatory tradition and numerology.⁵ Hindemith's case for the primacy of the major

¹ Norman Cazden, "Hindemith and Nature", *MUSIC REVIEW*, XV, no. 4 (November, 1954), pp. 288-306.

² Paul Hindemith, *The Craft of Musical Composition (Unterweisung im Tonsatz)*, Book I, *Theoretical Part*, trans. Arthur Mendel, rev. ed. (New York, Associated Music Publishers, 1945), pp. 9, 55, 152.

³ Hermann L. F. Helmholtz, *On the Sensations of Tone*, trans. Alexander J. Ellis, 6th ed. (New York, Peter Smith, 1948), p. 232.

⁴ *Ibid.*, p. 235.

⁵ Cazden, p. 306.

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triad, for instance, is not based on the audibility of the harmonic partials 2 to 6, which form a major triad, but rather on their "proportional relations".⁶ For Hindemith admits, and Cazden reminds us, that partials 2 to 6 are not always audible and more prominent than those lying above the sixth, which conflict with the major triad.⁷ By ignoring this fact in favour of the simple ratios between the vibration frequencies of the tones in a major triad (4-5-6), Hindemith allows the laws of acoustics to bow to those of mathematics. In doing so he echoes a view which was current in 1875 when Helmholtz wrote: "Even in the most recent times", as if in posthumous rebuttal to Hindemith, "theorizing friends of music may be found who will rather feast on arithmetical mysticism than endeavour to hear upper partials".⁸

* * *

Hindemith also mingles acoustics and mathematics in deriving *Series I*, i.e. a list of the twelve tones in the order of their relationship to the initial tone in the series. According to Hindemith's method, each of the harmonic partials of a given tonal centre is taken in order and considered as a lower overtone of another fundamental which then takes its place in the series. The rule is to divide the vibration frequency of each partial successively by the order numbers of the partials below it, beginning with the lowest. Those resultants which are not mere duplications of previous resultants and which lie within the octave above the original fundamental, or progenitor, are accepted as members of the series.⁹

Thus, from the fundamental C64, the second partial c128 divided by the order number of the preceding partial (one), the tone c128 is arrived at. Next, from the third partial g192 divided by two the tone G96 is arrived at. Then, ignoring duplications and tones above the octave C-c, Hindemith's method produces, in order: F85.33 (from c¹256 divided by three), A106.66 (from e¹320 divided by three), E80 (from e¹320 divided by four), and E♭76.8 (from g¹384 divided by five).¹⁰

Hindemith does not go beyond the sixth partial g¹. The results would be "terrifying", he writes, if the same procedures were applied to the seventh partial, the "low" b♭¹448, as were applied to its predecessors.¹¹ For this he is rebuked by Cazden and others on the grounds that the seventh partial is just as "natural" as any other.¹²

⁶ Hindemith, *Craft*, Bk. I, p. 54.

⁷ *Ibid.*, pp. 16-17; Cazden, p. 290.

⁸ Helmholtz, p. 229.

⁹ Hindemith, *Craft*, Bk. I, p. 34. Cazden accuses Hindemith of inconsistency in using coincident overtones to derive the tones in his series, although rejecting the theory of coincident overtones as an explanation of the minor harmony. Cazden also claims that while Hindemith rejects the undertone theory of the minor harmony as far-fetched, his own "presumed generators" have no more validity (Cazden, pp. 297-9).

¹⁰ Hindemith, *Craft*, Bk. I, pp. 34-5.

¹¹ *Ibid.*, p. 37.

¹² Cazden, p. 291. See also William E. Thompson, "A Clarification of the Tonality Concept" (University of Indiana Dissertation, 1952), pp. 50-51. Thompson believes that Hindemith's decision to discontinue the application of his method after the sixth partial is arbitrary, and evidence that his twelve-tone series is predetermined and not the result of logical deduction.

At this point Hindemith adopts a new procedure. He now considers each partial as a higher overtone of a different fundamental which then takes its place in the twelve-tone series. The new rule is to divide the vibration frequency of each partial successively by the order numbers of the partials above it up to, but not exceeding, the number six.¹³ The application of this method produces only one new tone, $A\flat 51\cdot 2$ (from $c^1 256$ divided by five), which is below $C64$, the lower boundary of the octave which is allowed for resultants. But Hindemith blithely transposes the $A\flat 51\cdot 2$ one octave upwards, yielding $A\flat 102\cdot 4$, which he accepts as the next tone in *Series I*.¹⁴

To derive the remaining tones, save one, a third method is used. According to this method, each of the previously derived tones is taken in rank order and treated as if it were a progenitor.¹⁵ From each of the new progenitors the partials are extracted as before, and their vibration frequencies divided first by the lower order numbers and then by the higher order numbers.¹⁶

According to the third method, the first of the new progenitors is $G96$. From its third partial $d^1 288$ divided by four, $D72$ is arrived at.¹⁷ From the same $d^1 288$ divided by five, $B\flat 57\cdot 6$ is produced, which when transposed an octave upwards is $B\flat 115\cdot 2$. Hindemith rejects this $B\flat$, however, because it is too far away from the $A106\cdot 66$ in the ascending chromatic scale.¹⁸ Thompson is not satisfied with Hindemith's reason for rejecting the $B\flat 115\cdot 2$. It constitutes an admission, he states, that Hindemith is more interested in the relationship of each tone to its neighbours in the scale than he is in its relationship to the progenitor tone.¹⁹

With the acquisition of $D72$ and the rejection of the "high" $B\flat 115\cdot 2$, Hindemith believes he has exhausted the possibilities of the progenitor $G96$. Its fifth partial, however, $b^1 480$ when divided by four yields $B120$. Had Hindemith carried out this step *$B120$ would emerge as the next tone in the series.*

But Hindemith allows himself to commit this error of omission and proceeds to the next progenitor. This is $F85\cdot 33$, which produces $B\flat 113\cdot 78$ ($f^1 341\cdot 33$ divided by three) and $D\flat 68\cdot 27$ ($f^1 341\cdot 33$ divided by five).²⁰

Hindemith derives no new tones from the partials of $A106\cdot 66$. But its fifth partial $C\sharp 533\cdot 33$, when divided by six, produces $F\sharp 88\cdot 88$, which Hindemith ignores. This is lower than any of the $F\sharp$ s or $G\flat$ s which Hindemith later derives from other progenitors.

The next progenitor is $E80$, whose third partial $b240$ divided by two yields $B120$.²¹ This tone should have been derived from $G96$ (see above), making it the eighth item in *Series I*, not the eleventh. Evidently, Hindemith wished to

¹³ Hindemith, *Craft*, Bk. I, p. 35.

¹⁴ *Ibid.*, p. 36.

¹⁵ By an amazing coincidence, perhaps, Helmholtz stated the principle underlying this method when he wrote, in 1875: "We shall consider musical tones to be related in the first degree which have two identical partial tones, and related in the second degree when they are related in the first degree to some third tone". (Helmholtz, p. 256.)

¹⁶ Hindemith, *Craft*, Bk. I, p. 39.

¹⁷ *Loc. cit.*

¹⁸ *Ibid.*, p. 40.

¹⁹ Thompson, *op. cit.* (above, note 12), p. 54.

²⁰ Hindemith, *Craft*, Bk. I, p. 40.

²¹ *Loc. cit.*

demonstrate a weak relationship between the leading tone B and the tonal centre C; but the strict application of his own method of derivation does not accomplish this purpose.

This completes the twelve-tone series except for F# or Gb. This tone is derived in several ways by taking as progenitors those tones which themselves were derived from progenitors other than the original progenitor C.²² Cazden is merciless in commenting on this complicated procedure.²³ This writer, however, is merely puzzled that Hindemith should consider it necessary to establish a relationship between C and F#, since the latter is the last item in the series anyway.

From C, then, *Series 1* stands as follows:

C-c-G-F-A-E**b**-A**b**-D-B**b**-D**b**-B-F#(G**b**)

Hindemith contends that the value-order represented by *Series 1* is universally valid and applicable to all music. Theorists are unanimous, he claims, in recognizing differences in the relationship of various tones to a central tone. He also states that the order in which the tones are allegedly related to a central tone is identical in all theories and corresponds to his own *Series 1*. But he is the first, he believes, to present the full scientific explanation of these relationships and to demonstrate their basis in the laws of nature.²⁴

Helmholtz, employing a simpler method than Hindemith, found the following series of tones in the octave c-c¹ to be related to the tonic c in the first degree, i.e. possessing one of the same partials as c. In Helmholtz' series the tones are ranked according to the simplicity of the ratios between the frequency of c and each of them. These ratios are shown in parentheses:

c(1:1), c¹(1:2), g(2:3), f(3:4), a(3:5), e(4:5), e**b**(5:6).²⁵

The above is the same as Hindemith's *Series 1* as far as it goes. Helmholtz, unlike Hindemith, did not bother to work out the rank order of tones related to the tonic c in the second degree (related in the first degree to a third tone), or he would have pre-empted Hindemith's claim to be the first to develop a twelve-tone series from the principle of coincident overtones.

* * *

All of the theories that Hindemith has worked out in connection with intervals and chords are based on another acoustical phenomenon, that of combination tones, which are produced when two or more tones are sounded together. There are two orders of combination tones in Hindemith's system:

First order combination tones, which are equal in frequency to the difference in the frequencies of the upper and lower tones in the interval ($C^1 = U-L$).

Second order combination tones, which are equal in frequency to the difference in the frequencies of the lower tone in the interval and the first order combination tone ($C^2 = L-C^1$).²⁶

²² Hindemith, *Craft*, Bk. I, p. 41.

²³ Cazden, p. 305.

²⁴ Hindemith, *Craft*, Bk. I, pp. 54-5.

²⁵ Helmholtz, p. 257.

²⁶ Hindemith, *Craft*, Bk. I, pp. 61-2.

Hindemith's combination tones are identical, order numbers and all, with those that Helmholtz called *difference tones*. Helmholtz went further, however, in that he recognized the existence of *summation tones*, which are equal to the sums of the frequencies of the primary tones (or to the sums of their multiples).²⁷

Hindemith's theories of interval values and interval roots rest on the assumption that the loudness of difference tones, which he calls combination tones, diminishes as the order numbers increase. Thus, he assumes that the first order combination tones (difference tones) in his system are louder than those of the second order.²⁸ Summation tones he does not mention at all, although he admits that there are higher orders of combination tones. These, however, are too faint to be heard, he believes, and they do not enter into his calculations.²⁹

Hindemith's assumption is not supported by other authors who hold that the relative loudness of the different orders of combination tones varies with the loudness of the primary tones. At low intensities, according to Apel, combination tones are quite inaudible.³⁰ Stevens and Davis stimulated the ear of a cat with pure tones of 700 and 1,200 cycles at different intensities, and the intensities of the resultant tones were measured with a wave analyzer. Cazden, in his article, leans heavily on their results; they found that the equivalents of Hindemith's combination tones of the first and second orders were never the first and second in loudness. At high intensities the order was reversed, and both types were overshadowed by combination tones for which Hindemith has no equivalents, including several orders of summation tones.³¹

In Hindemith's defence it may be pointed out that

- (1) the ear of a cat is not a human ear;
- (2) Stevens and Davis studied only the interval formed by 700 and 1,200 cycles (a "large" major sixth);
- (3) Stevens' and Davis' results may be accurate for *sensation* but other factors enter into the *perception* of combination tones. For instance, Jeans holds that summation tones are more difficult to perceive than difference tones "because they lie in a region of frequencies which is already occupied by the harmonics of the original sounds".³² For this reason Hindemith's exclusion of summation tones may be justified.

* * *

Hindemith views combination tones as impurities which "cloud" or "burden" an interval, except for those which reinforce, in the unison, one of the

²⁷ Helmholtz, pp. 154-6.

²⁸ Hindemith, *Craft*, Bk. I, p. 67.

²⁹ *Ibid.*, pp. 63-4.

³⁰ Willi Apel, *Harvard Dictionary of Music*, rev. ed. (Cambridge, Mass., Harvard University Press, 1947), p. 163.

³¹ Stanley S. Stevens and Hallowell Davis, *Hearing, Its Psychology and Physiology* (New York, Wiley, 1938), pp. 197-8.

See also Cazden, pp. 293-6.

³² James Jeans, *Science and Music* (New York, Macmillan, 1940), p. 238.

primary tones.³³ The intervals differ, he writes, in the weight of the burdens they carry. According to this difference, they can be arranged in order as a series beginning with the least burdened, or purest of them, and becoming successively more burdened and impure as the series progresses. Hindemith has constructed such a series which he calls *Series 2*. It represents not only the increasing impurity of the intervals, which Hindemith takes to be an acoustical fact, but also a gradation in the presumed psychological effects of this increasing impurity. As the harmonic clarity (*Klarheit, harmonische Deutlichkeit*) decreases with each interval in *Series 2*, he believes, so also does the feeling of "strength, hardness and density" (*die Tragfähigkeit, den Härtegrad, die Dichte*) they create.³⁴

Thus, in the octave c^1-c^2 , Hindemith finds only one combination tone, c^1 ($512-256 = 256$), which is the same as the lower tone in the interval. The octave, therefore, is said to be the "clearest, unclouded (*klarsten, ungetrübt*) interval".³⁵

In the fifth c^1-g^1 and its inversion, the fourth $g-c^1$, the combination tones are all Cs or cs, as Hindemith figures them. These tones are lower octave doublings of one factor in these intervals. This "slight burden" places fifths and fourths next in rank of increasing impurity after the octave.³⁶

Hindemith's calculations for fifths and fourths apply only when the fifths are in the ratio 2:3 and the fourths 3:4. When these ratios are altered, even his theoretical combination tones do not double one factor in the interval. In Hindemith's own twelve-tone series based on C64, for instance, the fifth D-A (72 and 106.66) is smaller than the ratio 2:3 (72 and 108). The first order combination tone is a "high" $D\flat_1$ ($106.66-72 = 34.66$) and the second order combination tone is a "high" D_1 ($72-34.66 = 37.34$). These combination tones do not double but clash with the D in the directly produced interval. The fourth A-d is similarly affected by Hindemith's deviation from the ratio 3:4.

To Hindemith's thinking, the major third c^1-e^1 has the combination tones C and g; its inversion, the minor sixth e^1-c^2 , has the combination tones g and c. In these intervals one of the constituent tones is doubled by the combination tones. In addition, the combination tones introduce a new tone which is not contained in these intervals. Major thirds and minor sixths, Hindemith reasons, therefore bear a heavier burden than fifths and fourths.³⁷

The foregoing calculations apply only when the major thirds are in the ratio 4:5 and the minor sixths 5:8. When these ratios are altered the combination tones no longer double one of the constituent tones. In *Series 1*, for instance, the major third $e^1-g^\sharp(ab)^1$ is larger than 4:5. Its combination tones are a "low" F^\sharp and a "high" $b\flat$, neither of which doubles either tone in the interval itself. The major thirds $A-c^\sharp(d\flat)$, $B\flat(A^\sharp)-d$ and $B-d^\sharp(e\flat)$ are also larger than 4:5. These major thirds and their inversions are considerably

³³ Hindemith, *Craft*, Bk. I, p. 65.

³⁴ *Loc. cit.* (*Unterweisung*, Bk. I, p. 83).

³⁵ *Loc. cit.*

³⁶ *Loc. cit.*

³⁷ *Ibid.* (*Craft*, Bk. I), pp. 65-6.

more "burdened" than the pure intervals from which Hindemith derives his interval ranks.

Hindemith now goes on to minor thirds and major sixths: The minor third e^1-g^1 has the combination tones C and c^1 ; its inversion, the major sixth $g-e^1$, has the combination tones c and C. In these intervals neither tone is doubled by the combination tones. Minor thirds and major sixths, therefore, come after major thirds and minor sixths in Hindemith's series.³⁸

But the octaves between the combination tones formed by minor thirds and major sixths are only found when these intervals are in the ratios 5:6 and 3:5. In *Series 1*, however, the minor thirds D-F, C \sharp (D \flat)-E and G \sharp (A \flat)-B are all smaller than 5:6. These intervals and their inversions have quarrelsome combination tones as do the numerous fifths, fourths, major thirds and minor sixths which deviate from the pure ratios of 2:3, 3:4, 4:5 and 5:8.

Series 2 continues with the major second and minor seventh, the minor second and major seventh, and the tritone. Hindemith's method breaks down for seconds and sevenths, as he freely admits, since they occur in a variety of sizes and their combination tones differ accordingly.³⁹

It may be noted that, according to the intonation of the twelve tones in Hindemith's series, all the intervals occur in a variety of sizes, some of which are more burdened than some of the seconds and sevenths. The second c^1-d^1 (8:9), for instance, in *Series 1*, presents the first order combination tone C_1 , which doubles one factor in the interval. This major second, therefore, should stand higher in the series than the "pure" minor third e^1-g^1 (neither factor doubled) and all the enharmonic intervals mentioned above.

Nevertheless, Hindemith believes that the following list of intervals, *i.e.* *Series 2*, truly represents the order of their relative value in terms of clarity and definiteness: unison, octave, fifth, fourth, major third, minor sixth, minor third, major sixth, major second, minor seventh, minor second, major seventh, tritone.

Hindemith also claims that his investigation clears away the ancient confusion concerning the consonance and dissonance of intervals. In his thinking, consonance and dissonance are relative concepts and not absolute opposites according to which all the intervals may be neatly classified. *Series 2* represents a gradual transition from consonance to dissonance. The intervals at the beginning of the series are the most consonant and those at the end are the most dissonant, but there is no dividing line within the series between the consonant intervals on the one side and the dissonant intervals on the other.⁴⁰

In Book II of *Unterweisung*, however, Hindemith divides the intervals into two groups, Group A, which includes fifths, fourths, thirds and sixths, and Group B, which includes seconds and sevenths. The tritone, because of its indefiniteness, is in a class by itself.⁴¹ Although he does not use the words "dissonant" or "consonant", he refers to the intervals in Group B collectively

³⁸ Hindemith, *Craft*, Bk. I, p. 66.

³⁹ *Ibid.*, pp. 79-80.

⁴⁰ *Ibid.*, pp. 84-5.

⁴¹ Paul Hindemith, *The Craft of Musical Composition*, Book II, *Exercises in Two-Part Writing*, trans. Otto Ortmann (New York, Associated Music Publishers, 1941), p. 37.

as "tense" by comparison with those in Group A.⁴² Group A, he writes, is "a complete group of the most valuable materials".⁴³ Evidently Hindemith still believes in the polarity of consonance and dissonance, his relativist protestations notwithstanding.

After Hindemith's presentation of the acoustical basis for *Series 2*, there appears quite suddenly in *Unterweisung* the principle that the harmonic and melodic value of the intervals are distributed in opposite directions. While the series represents the diminishing harmonic force of the intervals, melodically the order is reversed. No evidence is cited in justification of this new principle.⁴⁴

Certain qualifications also appear quite suddenly, further complicating *Series 2*, which is no longer the simple gradation in the value of intervals that was offered originally. Hindemith now contends that the intervals at opposite poles of the series are not those which possess the maximum harmonic and melodic value respectively. Harmonically the major third now surpasses the fifth; and melodically the minor second yields to the major second:

"The strongest, most unambiguous interval, after the octave, which is unique, is the fifth, while the most beautiful is the major third . . . The simplest melodic step of the minor second is followed, reading from right to left (after the minor seventh), by the strongest and most beautiful melodic interval, the major second. Just as the most beautiful harmonic interval was not at the very beginning of the series, so the chief melodic one does not lie at the very end."⁴⁵

It is evident from the above that neither the harmonic nor melodic *value* of the intervals, in Hindemith's thinking, can be defined simply as a set of attributes. The fifth, for example, while "stronger" and more "unambiguous" than the major third, is held to be less "beautiful" harmonically; and the minor second, although melodically the "simplest" interval, is not as "strong" or "beautiful" as the major second, which is the "chief" melodic interval. Thus Hindemith recognizes differences in the harmonic and melodic value of the intervals quite apart from those which correspond to their relative position in *Series 2*. In expressing these differences he employs value words which reflect his subjective feeling about the intervals, and are based on musical usage rather than on physical laws.

* * *

In Hindemith's system, the roots of intervals as well as their relative values are determined from an examination of the combination tones. The root of an interval, he says, is the strongest tone in the aggregate formed by the interval and its combination tones by virtue of its low pitch, loudness, or doubling in the unison or lower octave.⁴⁶

⁴² Paul Hindemith, *The Craft of Musical Composition*, (Bk. II), pp. 52-3.

⁴³ *Ibid.* (Bk. II), p. 37.

⁴⁴ Hindemith, *Craft*, Bk. I, p. 88.

⁴⁵ *Loc. cit.* In the original German, "strongest, most unambiguous" is *stärkste und eindeutige*; "most beautiful" is *schönste*; "simplest" is *einfachsten*; "chief interval" is *Haupt-intervall* (*Unterweisung*, Bk. I, pp. 103-4).

⁴⁶ *Ibid.* (*Craft*, Bk. I), p. 68.

Within the framework of Hindemithian acoustics, this works fine for fifths and major thirds (lower tone root), and for fourths and minor sixths (upper tone root). In the minor third e^1-g^1 , however, the theoretical combination tones are C and c^1 , which fail to reinforce either of the original tones. The major sixth $g-e^1$, with the combination tones c and C, presents the same difficulty. Hindemith admits that C should be the root of both intervals since their combination tones are all cs or Cs and lower in pitch than the original tones. He is reluctant, however, to take as the root of an interval a tone which is not itself a member of that interval. In seeking a way out of this dilemma he abandons his own theoretical method of determining interval roots in favour of expedience. It is advantageous, he writes, to treat these intervals like their predecessors the major third and minor sixth. In minor thirds, then, the root would be the lower tone; in major sixths, the upper tone.⁴⁷

Hindemith is aware of the weakness of this position and permits the reader to base his calculations upon "the real roots" of minor thirds and major sixths. He prefers, however, the expedient course. As further justification for this step he points to the many sizes of thirds which the ear accepts and to the vague, neutral ground between the major and minor third. "With an interval that is so indefinite we can well afford ourselves the liberty proposed".⁴⁸

It may be noted that unless the major and minor thirds conform to the pure ratios of 4:5 and 5:6 respectively, the combination tones produced by these intervals present "impurities" which upset all of Hindemith's calculations in regard to root determination as well as the relative value of the intervals. Thompson makes a similar point in demonstrating that in equal-tempered tuning the combination tones for major thirds actually clash with the directly produced tones and that the combination tones for minor thirds clash with each other.⁴⁹

Hindemith also resorts to expediency in dealing with intervals larger than the octave. These have, in some cases, interior combination tones and completely new and different combination tones (not octave doublings) from those produced by their smaller counterparts. The overtone series of the lower tone also enters into the picture, creating further complications. Hindemith notes these difficulties but elects to ignore them in his root calculations and to treat these intervals as if their tones lay within the same octave. Thus, the ninth is handled like the second, the tenth like the third, and the eleventh like the fourth. "This is quite sufficient", he believes, "for the practical purposes of composition".⁵⁰

Hindemith finds that combination tones are no help in finding the roots of seconds and sevenths. These intervals occur in different sizes, with different combination tones. In the case of major seconds, however, "practical considerations" lead him to choose the upper tone as the root. In minor sevenths

⁴⁷ Hindemith, *Craft*, Bk. I, pp. 68-70.

⁴⁸ *Ibid.*, pp. 71-2.

⁴⁹ William E. Thompson, "A Clarification of the Tonality Concept" (University of Indiana Dissertation, 1952), pp. 72-3.

⁵⁰ Hindemith, *Craft*, Bk. I, pp. 73-4.

it is the lower tone because of "our familiarity with the dominant seventh chord".⁵¹

Hindemith treats minor seconds and major sevenths in the same manner as major seconds and minor sevenths; the root is the upper tone of the second and the lower tone of the seventh. He does not claim any acoustic justification for this but invites his critics to try to calculate the roots of minor seconds and major sevenths. The time and trouble involved, he promises, will repay them only with confusion and convince them that he is justified in his decision to observe the practice of composers in his choice of roots for these intervals.⁵²

One may argue, with Cazden, that since Hindemith's method fails to produce the roots he wants in more cases than it succeeds, it cannot be defended on scientific grounds. It appears that his theory of interval roots would be less vulnerable if he ignored acoustics altogether and acknowledged that expediency and the practice of composers were his only guides.⁵³

* * *

Despite their dubious bases, Hindemith's theories of interval values and interval roots are offered as essential links in his chain of theories. The next link is a method for determining the roots of chords. According to this method, the root of a chord is the root of the "best interval (*das wertvollste . . . beste Intervall*)" in the chord, that is, the highest ranking interval in *Series 2*.⁵⁴

Armed with *Series 2* and a method for determining the roots of chords, Hindemith has constructed a table of chord groups with a place for any chord whatever. The two main groups are A (without tritone) and B (with tritone). The main groups were then divided according to the presence of seconds and sevenths, and subdivided according to the position of the chord root—in the lowest voice or above. In Hindemith's table there are six sub-groups, labelled I through VI. Sub-group I is said to contain the most valuable chords; those in sub-group II are next in order of value; sub-group III chords are next, *etc.* The Roman numbers are followed by Arabic numbers or letters to represent distinctions within the sub-groups, *e.g.* Ia, IIb₁, IIb₂.⁵⁵

Hindemith encounters semantic difficulties in discussing the relative *value* of the chord groups in his system. For instance, the chords in sub-group I₁ (major and minor triads) are called the "noblest"; those in sub-group I₂ (inversions of major and minor triads) are "somewhat weaker"; those in sub-group IIa (common sevenths) are "milder" than those in sub-group IIb which contain the "stronger and sharper" interval of the major second; the chords of sub-group III (those with seconds and sevenths, no tritone) are a "rough and unpolished race", particularly the "sharp and grating ones" which contain the minor second or major seventh; the chords of sub-group IV (with tritone and minor second or major seventh) are "piquant, coarse, highly coloured . . . intractable"; but the worst he can say of the least valuable chords, those in

⁵¹ Hindemith, *Craft*, Bk. I, p. 80.

⁵² *Ibid.*, p. 81.

⁵³ Norman Cazden, "Hindemith and Nature", *MUSIC REVIEW*, XV, no. 4 (November, 1954), pp. 294-5.

⁵⁴ Hindemith, *Craft*, Bk. I, p. 97 (*Unterweisung*, Bk. I, p. 113).

⁵⁵ *Ibid.* (*Craft*, Bk. I), pp. 101-8.

sub-groups V and VI (augmented, diminished, and the chord in perfect fourths) is that they are "uncertain" and "ambiguous".⁵⁶

One must admit that it is difficult, without resorting to metaphors and other poetic practices, to find proper adjectives with which to describe the qualities of chords. Such words as *noble*, *unpolished* and *piquant* leave Hindemith open to the criticism that his system of chord classification may be somewhat coloured by cultural prejudice.

The words *stronger* and *weaker* are perhaps the most objective of the many adjectives which Hindemith uses in referring to the various chord groups. But he is not consistent in the value he attaches to the concept of strength. In comparing the chords in sub-group I₂ with those in sub-group I₁ the word *weaker* is used for sub-group I₂ chords which rank *lower* in Hindemith's scale of values. The word *stronger*, however, is used to denote the *inferiority* of the major second as compared with the minor seventh as a constituent of the chords in sub-group II. The major second may indeed be stronger, for in *Series 2* it ranks higher than the minor seventh; but this does not explain why its strength should lend it less value as a chord constituent.

It may be supposed that the decreasing value of the sub-groups represents a gradation from consonance to dissonance. But this would be pure surmise as Hindemith does not use the words *consonant* and *dissonant* in discussing chord values as he does with interval values. And it is well that he does not, for it might be difficult to defend a consonance-dissonance series in which the chords in sub-group V (augmented—containing only major thirds and minor sixths, and the chord in fourths—containing fourths and minor sevenths) were held to be more dissonant than those in sub-group IV, which contain the tritone plus minor seconds or major sevenths.

It is not until he goes beyond the discussion of chord values in *Unterweisung* that Hindemith explains what he means by the word *value* in appraising the various sub-groups. In developing the concept of harmonic fluctuation (rise and fall in the tension of chords in a musical work) Hindemith introduces the word *tension* into the discussion. In the chord table, he writes, "the harmonic *tension* of chords *increases* from section to section and from sub-group to sub-group in the same proportion as the *value decreases*".⁵⁷ Here is a clear statement of the criterion for judging the value of chords: the relative tension and relaxation of the sub-groups. This criterion, however, is not the only one which Hindemith recognizes. Tension leaves, he writes, and uncertainty enters when a tritone chord goes to a chord in sub-group V (augmented, chord in fourths).⁵⁸ The chords of sub-group V, then, are less tense than those of sub-groups II and IV, which contain the tritone, even though sub-group V is lower in the scale of values. In this case, the criterion of *uncertainty* supersedes

⁵⁶ Hindemith, *Craft*, Bk. I, pp. 101-3. The original German words for "noblest", "weaker", "milder", "stronger and sharper" respectively are *edelsten*, *abgeschwächter*, *mildeste*, *stärkere* and *schärfere*. "Rough and unpolished race" is *grobes und wenig edles Geschlecht*: "sharp and grating ones" is *starken Klangverschärfung . . . reibenden*; "piquant, coarse and highly coloured" is *überspitzer, buntgefärbter* (*Unterweisung*, Bk. I, pp. 116-17).

⁵⁷ *Ibid.* (*Craft*, Bk. I), p. 116. The italics are Hindemith's.

⁵⁸ *Ibid.*, p. 126.

that of tension. The chords of sub-group VI (diminished) escape this confusion. Here, the criteria of tension and uncertainty no longer compete but unite in assigning these chords to the position of least value in Hindemith's table—last place.

* * *

In his analysis of the movement of chords in a musical work, Hindemith represents the *harmonic fluctuation* by placing in order the appropriate symbols (IIb₁, III₂, etc.) for the several chords. But these symbols serve only to identify the structure of the chords, not their actual tones. To complete his analysis, therefore, Hindemith extracts from each chord in a progression its fundamental tone, the root, which acts as its standard bearer in a kind of harmonic shorthand. From the succession of roots, he believes, in addition to the harmonic fluctuation, the value of a chord progression can be estimated.⁵⁹

He begins with the simplest relations: those between two adjacent chord roots. In adjacent chords, providing they belong to the same sub-group (no fluctuation), the value of the progression depends on the interval between the roots in accordance with the harmonic values of the intervals in *Series 2*. Thus, the best (*wertvollste*) progressions are those based on the interval of a fifth; next best are those based on the fourth, followed in order by root progressions of the third or sixth, second, and tritone, which have the least value of all.⁶⁰

Evidently in this context the word *value* bears the same connotation as *clarity* or *definiteness*, since these are the qualities which the higher ranking intervals in *Series 2* allegedly possess in greater measure by virtue of the relative purity of their combination tones. Presumably the strong relationship between the tones in the higher ranking intervals in *Series 2* is also felt when they occur as the roots of successive chords, lending greater value (clarity, definiteness) to those progressions.

This interpretation is confirmed by the words which Hindemith uses to characterize the various root movements. Those of a fifth, for example, have a "surer foundation" (*festeres Fundament*) than the others; hence they are the most valuable. On the other hand, root movements of a third or sixth are said to be inferior because of the "softness" (*Weichheit*) of thirds and sixths, and those of a second are inferior because of the "melodic" character of seconds.⁶¹ But "soft" and "melodic" are not synonymous with "bad" or "wrong". It cannot, therefore, be assumed that Hindemith considers the strong harmonic intervals to be necessarily good or correct in all situations. When they occur between consecutive chord roots, however, they are better and more valuable *only* in the sense that they are strong and harmonic, more clear and definite than the soft melodic intervals.

* * *

In Hindemith's system of analysis tonality is determined from the root progression. The tonal centre is that root-tone which occurs most frequently,

⁵⁹ Hindemith, *Craft*, Bk. I, p. 121.

⁶⁰ *Ibid.*, pp. 122-3 (*Unterweisung*, Bk. I, p. 141).

⁶¹ *Loc. cit.*

or that which concludes a progression; it may be further supported by the presence of its fifth and fourth (dominant and subdominant). A progression contained by one tonal centre, thus established, is called a *tonal sphere*. Tonal spheres may shift (modulation) as the chord roots group themselves around a new tonal centre, or they may overlap; and there may be transitional tonalities.⁶²

As with all chord progressions, Hindemith determines the value (clarity, definiteness) of the cadence from the root progression. In cadences, he says, it is *Series 1* and not *Series 2* which exerts the stronger influence. For instance, in the two final chords of a cadential progression in the key of C, the root progression G-C outranks F-C, followed by A-C, E-C and the others, according to the degree of relationship of the penultimate root tone to the tonal centre.⁶³

Hindemith recognizes expressive qualities in the various cadential root progressions quite apart from their relative value in respect to clarity and definiteness, which is determined by the relationships of *Series 1*. The cadence 5-I (G-C), for example, has "great firmness" but 4-I (F-C) is "smoother . . . strange and inaccessible"; 3-I (E-C) and 2/3-I (E♭-C) are "soft and amiable"; 2-I (D-C) possesses "harmonic sharpness"; 1/2-I (D♭-C) and 7-I (B-C) are the "mildest" cadences owing to the leading tone effect of the half-step.⁶⁴

Because of this profusion of adjectives it cannot be inferred that the concept of value, as applied by Hindemith to cadential progressions, implies that some cadences should be employed more often than others. This writer, however, interested in Hindemith's own cadential practice, analyzed all the cadences in a sample selected from the eighteen works that Hindemith composed for three to seven instruments. The sample included the opening, middle and closing portions of two movements chosen from each work. There were 774 measures in the sample. The following table shows the results of this investigation:

Type of cadence	Number
5-I	22
4-I	9
6-I	4
3-I	3
2/3-I	5
5/6-I	2
2-I	7
6/7-I	9
1/2-I	15
7-I	2
4/5-I	3
Total cadences	81

⁶² Hindemith. (*Craft*, Bk. I), pp. 132-4, 149-51.

⁶³ *Ibid.*, p. 141.

⁶⁴ *Ibid.*, pp. 141-2. In the original German text "firmness" is *Festigkeit*, "smoothness" is *Glätte*, "strange" is *fremde*, "unaccessible" is *unnahe*, "soft and amiable" is *weich und lieblich*, "harmonic sharpness" is *harmonische Härte*, and "mildest" is *mildeste* (*Unterweisung*, Bk. I, p. 162).

The above table reveals a numerical superiority of the cadence 5-I (dominant to tonic), to which Hindemith attributes the most value in terms of clarity and definiteness. There were twenty-two 5-I cadences, 27 per cent. of the total. $\frac{1}{2}$ -I cadences (D \flat -C in the key of C) were next in order of frequency, with fifteen, or 18 per cent. of all the cadences that were found. This is consistent with Hindemith's later pronouncement, in unpublished materials which he distributed to his students at Yale, that its half-step neighbours help to confirm the tonic, *Series 1* notwithstanding. It is interesting also that the cadence 6/7-I (B \flat -C), which Hindemith holds to be low in value, occurred just as often as 4-I (subdominant-tonic); there were nine of each.⁶⁵

* * *

It is evident from the preceding discussions of root movements, tonal spheres and cadences that Hindemith believes the movement of chord roots to be affected by both *Series 1* and *Series 2*.

The influence of *Series 2* is felt particularly in the roots of adjacent chords, where the interval between them is of primary concern. Among the chord roots in a tonal sphere, however, viewed as a group, it is the relationship of all of them to the tonal centre, as determined by *Series 1*, which plays the major role. To the various root-tones thus considered from the viewpoint of their relationship to the tonal centre Hindemith applies the term *degrees*. In compositional practice, he believes, the relative frequency of the degrees should correspond with the closeness of their relationship to the tonal centre. Thus, the tonic root (1), or degree, should predominate, followed by the dominant (5), subdominant (4) and the others, according to the relationship values of *Series 1*.⁶⁶

The above principle is embodied in the term *degree-progression*, which Hindemith defines as the succession of chord roots "in accordance with the demands of *Series 1*".⁶⁷ In his discussion of the degree-progression, however, he uses the term to include all root progressions, even those "ill-designed ones" which fail to meet with the demands of *Series 1*. He offers, moreover, several "rules" governing the degree-progression which are based on the demands of *Series 2* rather than *Series 1*. These include the rule which disapproves the interval of a tritone between adjacent chord roots, and the rule proscribing half-steps between chord roots. These rules are concerned with the interval between roots, which is the business of *Series 2*, and not with their relationship to the tonal centre (*Series 1*). The rule against consecutive roots which form broken chords (except major and minor triads) is also concerned with the intervals between roots, since broken chords result from the horizontal accretion of intervals.⁶⁸

For these reasons we prefer to follow Hindemith's example and not his definition by interpreting degree-progression broadly to include all successions

⁶⁵ For a fuller discussion of this study, see Victor Landau, "The Harmonic Theories of Paul Hindemith in Relation to his Practice as a Composer of Chamber Music" (New York University Dissertation, 1957), esp. pp. 282-6.

⁶⁶ Hindemith, *Craft*, Bk. I, p. 143.

⁶⁷ *Loc. cit.*

⁶⁸ *Ibid.*, pp. 145-6.

of chord roots. In this sense, the degree-progression may be analyzed, as Hindemith himself has done, for those characteristics which relate to *Series 2* as well as for those which relate to *Series 1*.

The degree-progression may be restricted to the high ranking degrees of *Series 1*, particularly the tonic, dominant and sub-dominant, or it may contain a balanced variety of high ranking and low ranking degrees.⁶⁹ Hindemith believes that the width or extent of the distance in relationship between each chord root and the tonic chord root creates a certain tension between each of the various chords and the tonic chord. As the relationship declines the tension increases. This concept is embraced by the term *tonal amplitude*, which Hindemith introduces in the second volume of *Traditional Harmony*. Tonal amplitude, he writes, is the amount of tension between the tonic chord and each of the other chords in a tonal sphere which is dominated by it.⁷⁰

According to the principle of tonal amplitude, a simple G major triad would have little tension in the key of C but great tension in the key of D flat. This seems to contradict Hindemith's theory that the value of chords, their relative tension, is determined by their structure and does not arise from the key.⁷¹ This apparent contradiction, however, may be merely the consequence of Hindemith's use of the word *tension* in discussing both chord values and tonal amplitude. The meaning of the word is not the same in both cases. In the discussion of chord values *tension* refers to the expressive effect of a particular *Klang*, or sonority, which is inherent in the structure of the chord itself. In his discussion of tonal amplitude, on the other hand, the word *tension* refers to the conflict between the authority of the tonal centre and the urge of the individual harmonies to escape from that authority. When this urge is gratified, of course, a new tonal centre is established and modulation takes place.⁷²

The tonal centres in a musical composition, extracted from their environment and placed in order, produce a kind of super degree-progression to which Hindemith attributes the characteristics of its smaller counterpart. In a complete composition the prevailing tonality is established by the interplay of the same factors which serve that purpose in a tonal sphere, *i.e.* repetition, finality, and the confirmation of related tones. Thus, the tonal centre which is most repeated, or which appears at the end, or which is strongly supported by its dominant and sub-dominant, is revealed as the principal tone of a movement or of an entire work.⁷³

⁶⁹ Hindemith, *Craft*, Bk. I, p. 143.

⁷⁰ Paul Hindemith, *A Concentrated Course in Traditional Harmony*, Book II, *Exercises for Advanced Students*, trans. Arthur Mendel (New York, Associated Music Publishers, 1953), p. 41.

⁷¹ Hindemith, *Craft*, Bk. I, pp. 107-8.

⁷² This interpretation is confirmed in the unpublished materials mentioned above (see p. 149), in which Hindemith states that the value of a chord in relation to the keynote does not correspond with its value in terms of harmonic fluctuation.

⁷³ Hindemith, *Craft*, Bk. I, p. 151. Hindemith's super degree-progression has a parallel in the analytic method of Heinrich Schenker. In Schenker's reduction of the basic melodic and harmonic structure of a musical work (*Ursatz*), the lower line represents the progression of the roots of the most significant chords (*Stufe*). This corresponds roughly with Hindemith's progression of tonal centres except that Schenker did not recognize any real modulation in the course of a piece. He viewed the chord roots in his capsule analysis not as true tonal centres but as departures from the tonal centre to which they must eventually return.

Adele Katz, *Challenge to Musical Tradition, A New Concept of Tonality* (New York, Knopf, 1945), pp. 15, 21.

Felix Salzer, *Structural Hearing, Tonal Coherence in Music* (New York, Boni, 1952), Bk. I, pp. 226-32.

Here Hindemith offers, as a workable theory, another of his versions in minuscule of Boethius' *musica mundana*—the Harmony of the Spheres—in which the laws of earthly music are said to be duplicated in the vastness of the heavens.⁷⁴ In this case, the laws governing the lowly degree-progression are said to be duplicated in the mighty progression of tonal centres. The present writer does not dispute this. In fact, he prefers the employment of Hindemith's criteria (repetition, *etc.*) in determining the chief among several tonal centres to their employment in determining the principal tone of a tonal sphere. His disagreement is with Hindemith's inference that the line of tonal centres should obey the same laws as the line of chord roots simply because they are partially similar—both are reductions of a sort. As an analogy, prompted by Hindemith's own interest in cosmology, it may be pointed out that the planets in their orbits do not truly behave as do the electrons in theirs, although the simile (that they do) is beautiful and awe-inspiring.

* * *

This critique is incomplete, for space does not permit a thorough discussion of Hindemith's entire theory of harmony. Perhaps it has been sufficiently thorough, however, to indicate that Hindemith's system is hardly without its share of defects. In this respect Hindemith is in good company, for Shirlaw found as many or more defects in the great theories of the past, including that of Rameau, which held sway for two centuries.⁷⁵ And, like Rameau's, Hindemith's achievement is nonetheless impressive for constructing his ingenious and elaborate system—although perfect it is not.

On the credit side is his classification of chords—not the ultimate and ideal classification perhaps, but valuable in that it points to a basis for classification other than the antiquated tertian basis. The principle of harmonic fluctuation, too, provides an avenue of escape from the expressive limitations of tertian harmony. For the most part, those theories which affect the actual progression of harmonies are not as faulty as the superfluous underpinning which Hindemith has given them. His musical instinct served him better than his knowledge of science.

Hindemith's theory suffers from too grandiose a goal: "to comprehend and explain from the technical point of view all possible kinds of music".⁷⁶ In this he has failed, as anyone must, and the effort cost him many errors. But he has succeeded in extending the theory of harmony to make it somewhat more serviceable in this period of diverse and changing styles.

⁷⁴ Hindemith's fondness for this ancient philosophy is well known. See *Craft*, Bk. I, pp. 53-4.

⁷⁵ Matthew Shirlaw, *The Theory of Harmony* (London, Novello, 1917).

⁷⁶ Paul Hindemith, "Methods of Music Theory", *Musical Quarterly*, XXX (January, 1944), p. 20.

The Thirteen Tone System

BY

NORMAN CAZDEN

THE thirteen tone system is freely offered as a constructive remedy for those fatal flaws which make the more familiar twelve tone system ultimately unworkable, and which portend its early demise.

The twelve tone system, also known as the serial technique or as the dodecacophonic principle, has the well-recognized objective of employing musical tones exclusively for non-musical or unmusical ends. This objective is not easily attained, and requires special gifts for success. For most practitioners come to subscribe to the twelve tone system only after having exhibited traces of musical talent, or at least after having acquired some rudimentary musical training. Hence many a dedicated dodecacophonist retains an uneasy inclination towards auditory imagery, and perhaps a vestige of artistic conscience. Either can test severely the integrity of his subconscious, in which plight it affords him little comfort that music critics and aestheticians have long encountered similar difficulties.

The principal way the twelve tone system achieves its objective is through tone abstraction. Abstraction removes raw tone elements from their usual association with the difficult art of music, and thus with the sordid human conditions which that art reflects; both are irrelevant to dodecacophonic purposes. Once potential musical associations are frustrated, a moderate expenditure of time and effort enables the least talented to construct acceptable twelve tone works.

Dodecacophony thus sets out from general concepts first promulgated by more primitive cults devoted to the worship of simple formal abstraction in the arts. Philosophers and fools, appreciators, promoters and customers of the trade in esoterics, and sundry other somnambulists including even some initially musical devotees, have for long been bemused and fascinated by the vaunted joys of formal abstraction, best obtained from musical forms and formulas emptied of musical substance. But only the most exalted among them have been wafted aloft to the steeper and rockier heights of the dodecacophonic perspective, where the now empty musical forms and formulas are replaced by utterly non-musical or unmusical ones.

Some adherents, notably the most recent novitiate, still testify eagerly and uncritically to their beatitude, content that their ultimate release is destined to come either through drowning or through deafness. Drowning awaits those adrift in the residue of that neo-mediaeval crabs' webs soup that has thus long outlasted its fellow plagues, while near deafness is induced among those still burdened with ears through their repeated subjection to advertisement of the finest multiphonic hifi equipment on record.

But some rare souls in the twelve tone camp endure restless and troubled. Haunted by musical experiences and habits not fully suppressed, they pause

occasionally to hear and to think rather than always to pray, whereupon they are confronted by the inescapable limitation and the foreseeable *débâcle* of the twelve tone system as now constituted. Then may disciple turn heretic; then may he discover how thin was the screech, and so fall from grace, self-condemned thenceforth to compose nothing better than earthly music. To save these more sensitive souls from the dangers attending their imminent lapse of faith, the awful gap in the twelve tone system must be closed. The thirteenth tone must be revealed at last.

Yet the secret of the thirteenth tone cannot be contemplated until all its cunning veils have been lifted. First the rules for abstracting musical tone from musical matrix must be comprehended; nay, not merely comprehended, but squeezed until their innermost ichor oozes out. Then let us not neglect betimes the ritual intoning of the serial formulas, so as to bolster our ardour and maintain our status as initiates. And let us be warned from the outset against sceptics, that we may give them no ground.

The rule has been given that a term in a series of twelve may not recur out of turn. Obviously, without this rule there can be no twelve tone system. Still the sceptic is not deterred from asking, again and again, why not? Yet of all the twelve tone concepts only this precious commandment, signifying anticipate ye not, is musically grounded; to the confounding of all sceptics.

The rule has been given that all octave terms may be equated, because. Only those among the faithful who quaff freely of liquid ecstasy know how this rule flows inevitably from the first; something to do with psychological brightness. Let the radiance of this brightness be called intuitive, indefinable or tautological; let the sceptic caution us that such sophistry has long been excluded from every domain of science. Why then deny it a final refuge in what passes for a theory of music? Harken all: beware the sceptic.

The rule has been given that a term in a series of twelve retains for ever its absolute pitch, octave transfers forgotten. Whereupon the sceptic asks whether timeless pitch provides sufficient identity; whether our hearing operates with absolute values; and whether we wish it did so. And then he asks, whence from this rule arises the turnabout that allows a series to be transposed? Thus is it clear that the sceptic is thinking of how we hear music, and not of the twelve tone system.

The rule has been given that a row may be inverted, or reversed, or both inverted and reversed, only not diverted. Now the sceptic wonders aloud whether our perceptions are symmetrical enough to match. Irreverently he asks whether all phenomena, including dodecacophonists, necessarily move about unperturbed when upside down or inside out. He asks whether we do not ordinarily care to know if we are coming or going. In truth, he is a veritable sceptic, and while his questions are embarrassing, they are ever so dull.

The rule has been given that the inexorable logic of the twelve tone row controls the melody and the harmony, the counterpoint and the thematic development, the fleeting motifs and the sectional design of a composition; even its libretto, its stage lighting and the plan schedule of its conductor. But the sceptic will only inquire just how the row determines the rhythmic

organization or the instrumentation. These questions we will have to make up answers to next time.

Beware then the sceptic, who comes to scoff rather than to understand, quailing not before the splendour of revelation. Not through petty scholastic reasonings will the inner power of the dodecacophonic principle be attained and mastered, for reason nourishes only blasphemies such as may entrap the mind, though they do not stir the soul. Let the unbeliever prate of artistic impulse or beauty, and the loyal dodecacophonist answers calmly about the internal consistency of the system, demonstrable by mathematical diagram. Let the unbeliever challenge the logical inconsistencies of the system and its diagram, and he learns that all is unfathomable inspiration, welling up out of the abyss of the boundless unconscious. Shall vain criticism overcome so staunch a faith?

The way to truth lies not in rational trial of outward attributes or formulations, but in penetration of the mystic essence. And like all great and ultimate truths, the dodecacophonic principle, shorn of its mundane manifestations, proves miraculously simple. It is but the eradication from an initially musical tone of all its real properties, real relationships and real conditions of existence. Everything is removed from it, in fact, but its enumeration index in the magic series.

To judge how superior to prosaic reality is this distillation of a musical tone when the dodecacophonic process has been exercised upon its *corpus*, we have only to compare a real tone with the abstraction represented by an equivalent serial term. For a real musical tone is encumbered by numerous natural properties which impede its free use. It has, for example, a known audible register. More, it has pitch. It has some specified loudness, and perhaps some variation in that loudness. It has a determinate duration, both absolute and relative. It has some sonorous quality or timbre, roughly if concretely referred to a known performing medium through previous aural experience. It has further a melodic or a harmonic relation to some other tone or tones, often both at once. It has similarly some comparative time interval, some relative loudness, and some contrast, resemblance or conjunction of timbre, time and pitch levels with preceding or following tones. The real tone can serve as a focus for definition and recall, and thus enter into significant musical configurations, whether or not its individual features are isolated in hearing.

The series term abstracted from this single tone element is tied down to none of these material properties, which are accidental and external to the dodecacophonic principle. The series term can be found in any register at all, preferably a distant one. It can be encountered at any pitch, by dint of transposition or inversion of its row. Its serial position neither controls nor depends upon its loudness, though inaudibility is much admired of late. Row units likewise have no prescribed or predictable duration, floating as free of musical time as of musical space. This temporal indeterminacy is indeed the chief source of that same exhilarating freedom which philistines insist on misinterpreting as a built-in absence of bearings. The sonorous quality or timbre of a series term cannot be observed or described, save that it is habitually

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unique and strained; these things pertain to the matter of tone and not to its spirit. The compelling disorientation induced by abstract serial order damps out auditory or conceptual reference, lest the series become inadvertently fixed in consciousness as a weird musical theme. Better that it be masked by a complex sonority during a grace note, whence it can crystallize out on paper as the more ethereal stuff declared delightful to the subconscious. Octave jugglings and intro-reversions also help thwart any incipient recognition of tune segments or harmonies, the better to expose the listener's nerve endings to unadorned dodecacophony.

So the series term, born in the guise of a musical tone, becomes a higher abstraction abiding outside time, space and the universe. It is as remote from the objective acoustic reality of external nature as from the subjective psycho-acoustic reality of the perception of musical relations. The series term soars beyond those lesser dimensions where dwell frail human beings with their little world, their history, their art, their thought, and the pathetic outgrowths thereof. The dodecacophonic entity instead possesses but a single quality, though that one the mightiest of all: its numerical position or rank in an arbitrary sequence of its fellows. Through that alone it affords unprecedented scope to the imaginative play of random isolates called serial composition. Though the series term cannot therefore constitute a real musical tone, neither can it be constituted by a mere musical tone. It need in no way fulfill the tone of which it is declared the ideal counterpart, for its purity of form transcends vulgar tone as it also transcends musical or human relevance.

It follows that inquiry into the non-musical objective or the unmusical results of serial technique would be impertinent in both senses. Its musical value is not an operational or pragmatic question; there is no money in it. Whether it be posed in scientific or in philosophic terms, it would be futile to complain of what the twelve tone system does not purport to be. If the twelve tone system purported to be a horse, we might reasonably object if it proved not to be one. Nobody has mistaken the twelve tone system for a horse, but some attitudes expressed have come close to equally extravagant error. Were the twelve tone system to be presented seriously, not as a horse, but as a procedure for the composition of music, we ought then in the interest of clarity and generosity to plead that this could not be so; that it would prove woefully inadequate if it were so; and that it would be unfair and unfortunate to misjudge its results in so false a light.

The possible musical connection of serial constructions should cause no further concern, once we grasp that the only reason such a question can arise is the semantic confusion engendered by the term *composition*, coupled with the admittedly frequent disguise of serial constructions in musical notation; both features are more commonly associated with works of musical art. But the absurdity of musical interpretations of dodecacophonic procedures becomes evident as soon as we observe that musical compositions are intended to be listened to with some enjoyment, whereas serial compositions are obviously not intended to be heard, and cannot be appreciated or enjoyed by hearing them, but only by studying their ravishingly cryptic notes.

Let us then forget music, the better to examine the extent to which present dodecacophonic methods meet their proper aim, and can continue to meet it. The intriguing metaphysics of the dodecacophonic principle thus disclose as its noble premise an abstraction from the real properties of an isolated musical tone to achieve an ideal echo in which only a numerical symbol of its serial position remains, while all the gross sounding properties of the tone itself have been shed. Precisely twelve such different and mutually exclusive numerical symbols form a row, each of whose terms is still officially defined as representing one of the equally tempered half-step divisions of the musical pitch octave, though without regard to register. No term may appear more than once within a single statement of the row. It shall not fail to appear, and neither shall it appear out of its assigned order.

Serial technique proper means first an invention or adoption of an initial twelve tone row, and then a fanciful ordering of its repetitions or variations according to pre-determined rules. Construction of a serial composition is thus partly a rigidly controlled establishment of a row and partly an anarchic or random manipulation of its disembodied shape. The rules prescribe such manipulations as transposition, inversion, retrogression, introversion, partition and the playing of both ends against the middle, momentary simultaneous clusters, and other ingenious and ingenuous devices for displaying the subconscious virtue of the ordained row.

In practice the choice of row and the formulas for varying it may be carefully designed also to avoid successions or junctures that might suggest familiar musical images, that might resemble triadic harmonies, or that might be taken for old-fashioned chromatics. More severe restrictions are said to be self-imposed by those taking private ascetic vows not required of the laity. But none of these accessory instructions are supposed materially to affect the dodecacophonic principle.

Yet the temporary limit to untrammelled twelve tone practice, while excused as an inverse concession to that musical nurture from which the present generation of dodecacophonists has been delivered, does weight the choice of row forms against a purely random pattern, and thereby it reduces the number of rows practically available. Sympathetic consideration of the further ramifications of this lessening range impels us to advance the providential proposal awaited. For in this wise we come upon the need, the possibility, and lo! the inevitability, of refurbishing serial technique by means of the thirteen tone system.

In order that the joys of indulgence in dodecacophony may endure, there must be no end in view to the number of possible serial constructions or compositions. To the dismay of some and the surfeit of many, an endless stream of this merchandise streams forth from production lines, not even fully automated. If the random lengths, sequences and treatments of rows are within the tolerances permitted under the acknowledged rules, as checked at quality control centres, they are stamped Approved—ISCM, and shipped off to the academies for retail distribution. Outwardly the economy appears healthy. Large stocks of raw twelve tone rows are maintained at a temperature suitable

for processing, and the training of skilled personnel goes on apace. So a falling off in the supply of dodecacophonic masterpieces is not widely feared. Quite the contrary; the usual complaint is overproduction. Hence competition is beginning to be felt keenly, and some regular customers are becoming more discriminating.

Unfortunately, the apparently healthy supply potential melts away upon closer examination. Some perspicacious brokers are quietly advising their clients to exercise caution, to diversify their portfolios, and to be watchful for sudden shifts in market conditions. It is to fend off the approaching shortage of row material that the remedy of the thirteen tone system is specifically directed.

For the available number of rows in the world is not as large as required. Understandably, it is a point of honour for a dedicated dodecacophonist never to use the same row for more than one composition. Of course a reputable one would not touch a second-hand row previously pre-empted by a colleague. In brief, multiple or alternative solutions for the same row are frowned upon in inter-state commerce. Surprisingly, no measures for the policing of row copyrights have yet been officially resolved; the reason for delay, upon investigation, turning upon the hypersensitivity of dodecacophonists to the concept of resolution.

If twelve tone rows may not be used again, then the number of possible twelve tone compositions is reduced to the less than infinite number of possible initial rows. And as we have already suggested, this number is further curtailed in practice by the prior exclusion from consideration of certain types of rows. Smuggling of unused rows does not yet threaten normal turnover channels, but with many of the best rows already used up, an eventual run on stocks may be in prospect.

Meanwhile, back at the ranch, the number of active dodecacophonists has mushroomed rapidly in the last few years. And each communicant assiduously collects disciples, who not only go into production when hardly weaned, but who proselytize afresh. Even some composers of established note have retired from their musical careers to take up serial doodling instead.

In these conditions it will surprise nobody that the twelve tone scene is becoming pretty crowded. It is already so crowded that, despite the theoretically enormous number of unclaimed rows now available for exploitation on payment of a modest fee, if that number be not rapidly increased in proportion, there will soon be a treading on toes. There will be quarrels, more deadly than are seen in current rivalries. Already debate smoulders over the propriety of the master reserve plan, which calls for the surreptitious advance assignment of desirable rows to recognized masters, to be employed exclusively for monumental compositions. Partisans declare some such plan to be their only protection against the permanent elimination of prized rows by unscrupulous raiding tactics, or to their casual usurpation by some ungracious novice. Opponents see the plan as an assault on free enterprise.

How soon these unpleasant concomitants of over-production and overcrowding may be upon us cannot be foretold readily; some claim it has happened

long ago. But all agree that no safeguard against these dire eventualities has been prepared. Those in office have been remiss in failing to establish from the outset an international row registry. For before any emergency moves can win support, a more definite quantitative report must be prepared. A world census of active dodecacophonists, together with a charting of their average annual rates of wearing out rows, would be most helpful in this predicament. That same scoffer we have already met may gloat over the possibility that the twelve tone fad might evaporate well before the dread saturation point is reached. But we cannot chance so fond a hope without supporting evidence; too much investment is at stake. Clearly the critical question becomes: after all, how many possible rows can there be?

Put thus, the answer can be calculated readily. The problem may be rephrased and programmed, to find how many permutations can be made of twelve terms taken twelve at a time. The mathematical formula for this is well known under the name *factorial* 12. This is notated $12!$ and is equal to $12 \times 11 \times 10 \times 9 \times \dots \times 3 \times 2 \times 1$. So we discover that there are ultimately available the grand total of 479,001,600 different possible twelve tone rows.

That theoretical figure, however, must at once be reduced by a factor of 144, to allow for transposed duplicates of rows already counted. The convention that reversal, inversion or both does not change a row requires a further division by 8; or nearly 8, for a few rows would be the same in reverse as when inverted. We must then subtract the unknown number of rows that have already been used. An exact figure can no longer be stated, but we can guess that the remainder should still be commendably large.

But not all the remaining rows may be equally desirable. We have already observed that the practicable total is deemed markedly less than the theoretical maximum due to such traditional requirements as the avoidance of triadic patterns. It is widely suspected that a hierarchy may otherwise exist among possible tone rows, such that some are inherently more adaptable than others to promising serial constructions. This suspicion probably reflects an unwarranted and somewhat shamefaced intrusion of subjective judgment, and even of musical judgment, into matters to which judgment and music are equally foreign. For from an abstractly formal standpoint, all tone rows are assumed random in origin and equal in potential. Dodecacophonists should therefore wait their turns patiently as the remaining stock is fairly distributed by lot.

Precise calculation of the number of rows excluded from use on either reasonable or capricious grounds thus becomes very involved, and requires for its mathematical solution the Monte Carlo method, which we shall find is not inappropriate to the data. But a rough sampling we have conducted by methods we may not divulge confirms that numerous rows still available do meet the conditions and the current perspectives of serial technique. All told, it seems safe to estimate that no more than 99.9 per cent. of the theoretical total would be lost to dodecacophony on all counts. Our answer is therefore of the order of magnitude of half a million.

So suppose we grant that for whatever reason or for no reason there exists a secret preference scale among tone rows of so over-riding a nature that the theoretical availability of the poorer ones represents no real choice. Still it would seem that an active stock of some half million possibilities, give or take a hundred thousand or so, does not bespeak a crisis in the offing. Is it not premature to become alarmed over a threatening depletion of world dodecacophonic resources, as of other fossil fuels, during this century at least?

Alas, the danger is by no means so remote. It may well overwhelm us in the short run, before defensive measures can become effective. For the rate of tone row depletion, which must enter into any calculation of the useful life of the dodecacophonic principle, is now at an unprecedented and wasteful level, and it is rising in geometric ratio. Already insurance rates are mounting rapidly. Already it has proven economical to exploit low-grade ores, signal warning that the precious and irretrievable stores, which some claim belong by right to the public domain, must no longer be squandered recklessly, without regard for future generations. Before bidding for the remaining rows inflates their price beyond reach, drastic conservation measures must be instituted.

Unfortunately we see that while some shrewd operators have hedged their investment positions, the highly individualistic dodecacophonists now in the ascendance have thus far proven so jealous of their personal prerogatives, and so chary of initiating concerted efforts even to protect their most vital common interests, for fear that rivals might benefit, that they may end by going down in a heap. Effective co-operation towards the instituting of comprehensive inventory and resources control is not envisaged by most experts at this time.

Thus the situation is more desperate than is generally appreciated. And there are ominous signs that it may grow rapidly worse. Those best in a position to ameliorate the condition are the least likely to bestir themselves, having regard only for quick profit-taking and amortization allowances. Vested interests are engaged in noisy promotion which only aggravates the danger and hastens the inevitable day of reckoning. Time is running out. The need of the hour calls for bold action.

Yet even this gloomy prospect does not bring the imminence of deep crisis fully into focus. For the vague sense of impending disaster responds unconsciously to two further elements. First, there is the very special horror that the idea of exhaustion of resources bears for the dedicated dodecacophonist. And second, there is the extent to which, due to that special horror, all future exhaustion has already been projected and discounted in advance.

Let us recall that the first impulse for the dodecacophonic principle came about through a clairvoyant prophecy that the artistic procedures and the possible human meanings of traditional tonal music were nearing exhaustion. The painful decision was then made to abandon obsolete musical objectives while it was still possible to do so gracefully. The far-sighted pioneers of dodecacophony strove mightily to induce their chosen and intrepid comrades to confide their futures no longer to the waning moments of a humanly communicative art. With the tonal system of Western music proved by doleful repetition to be reaching its bitter end, let those with enough vision and daring

and liquid capital abandon futile resistance to the surging tides of change. Let them eschew petty reforms that might at best forestall the deluge. Let them face the truth unflinchingly, and so protect their revenues to live through to a world reborn, in which remnants of the archaic art of music might still appeal to squares, but in which the elect would taste instead of the Elysian delights of dodecacophony.

The birth of the dodecacophonic industry was so contingent on the concept of exhaustion as to arouse wonder that its principle was first enunciated in words. For thereby its research and development stages, and its later public functions, were presented, elaborated, argued and propagated via a medium itself scheduled for early obsolescence. The traditional verbal medium in which dodecacophony was formulated was, like traditional music, of hoary antiquity. It had never been intrinsically rational, and its elemental letter-symbols had already been so overworked that their capacity for conveying any intelligible or worthy sentiment had long been worn away.

For language arose in the same sorry circumstances as did music, merely by dint of people using it, and before theorists came along to tell them their ways were wrong. Language forms too are but a haphazard growth out of the bogs of history. Of course it is consoling that the *Ur-German* language may outlast the less august tongues of other lands which boast fewer philosophic apologies in their support. But it can no longer be doubted that language in general has passed its historical zenith. Like music, it has worn out its usefulness as an adjunct to human intercourse. Like music, it has proven less than adequate to its profound and timeless task, which is above all to express the ineffable atmosphere of post-empire Vienna. Like music, it has been unable to register simultaneously the poignant pathos and the sovereign logical will of contemporary psychic states.

So language, like music, is exhausted. What remains of it is but the relic of a pre-rational, pre-dodecacophonic age. Hence it is incongruous, at least, that through base expediency, the theology of dodecacophony was first cradled in language, even if not in truth very accessible language. Pure dodecacophonic theory of the future will surely be neither spoken nor written. It will disdain so clumsy and outmoded a means of expression. It will simply leap from brain to inspired brain. Language will die out, as music has died out, in twelve tone land. And since the future is known, why delay its advent? Henceforth, let the dodecacophonic principle be communicated without words, just as its applications are already expressed without music.

The special terror which the impending exhaustion of resources holds for dodecacophony now emerges. And so it is the more discomfiting and the more ironic that, after a very brief hey-day indeed, the serial technique is already headed for discard. Its valuable and irreplaceable seed capital is being frittered away at an alarming and increasing rate. The most cursory extrapolation of its tendencies and discounting of its future can only lead to the forecast that in any meaningful sense, its day is done, its doom begun. This is the particularly deplorable state to which the threat of mathematically inevitable exhaustion reduces the twelve tone system.

But can nothing be done to save the situation? Must the inspiration of the ages sink into oblivion so soon after the art of music which it displaced? Could we but discover a new and inexhaustible supply of dodecacaphonic sustenance, could we but find a magic multiplier, the twelve tone system would have a new lease on life. Once again would it flourish, carefree and victorious. Alas, where are new fields of wild tone rows to be found? They do not grow on trees, neither in nurseries nor in conservatories. To find them we need to explore the thirteen tone system.

Let us remember that the formulas for tone rows are mathematical in form. A term in a twelve tone series is not constituted by a real musical tone in any sense, but merely by a number symbolizing an abstracted serial essence. The concrete shape of a twelve tone row is an ordered set of twelve distinct integers. All its transmutations can also be expressed through re-formulations of this initial series of integers, calculated numerically. So evidently the answer to our problem must also be capable of mathematical statement, and it might well consist simply in the addition of new integers to the system. Indeed, such addition of integers beyond 12 would have a gratifying multiplication effect.

For example, if we may set down thirteen distinct integers in a row, rather than twelve, the total number of theoretically available tone rows is at once increased from $12! = 479,001,600$ possible dodecacaphonic rows to $13! = 6,227,020,800$ possible tridecacaphonic rows: an immense expansion of potential. Even if we retain our previously established 0.1 per cent of such a figure as representing a probable approximate limit for composition practice, we still obtain a very welcome advance in the number of possibilities.

Continuing thus, we may calculate further that $14! = 87,178,291,200$ quattrodecaphonic rows could be made available, and so on. Let the theoretical octave division called the supradiatonic scale become the framework, and the laudably astronomical total of $19! = 121,645,100,408,832,000$ rows becomes possible: perhaps enough to attain the legendary harmony of the spheres. And the common quarter-tone scale would yield the truly magnificent figure of $24! = 620,448,401,733,239,439,360,000$ different sets of twenty-four distinct terms. There is even a name awaiting so wondrous a system.

Through an act of devotion, it might well seem that if the dire fate facing the twelve tone system cannot finally be evaded, at least it can be staved off for a very considerable period. This period would surely endure longer than the present harried generation of dodecacaphonists, even were the *per capita* rate of tone row use to spurt ahead. All that would be required would be an official rule that the terms in a series may number from 12 to 24. Barometric pressure would leap back to normal in an instant. If all such series were admitted to legal status, then at our conservatively estimated 0.1 per cent standard of usefulness the total would reach 647,478,071,469,537,800,965.6 guaranteed sources of inspiration, sufficient to keep the embers glowing for many a year.

True, the day of retribution would still arrive, when the last of the usable twenty-four tone rows would be transformed lovingly into a composition literally to end all compositions. On that day of judgment, none will know where to turn; the rock will be burning too. But then, none of us will be there to worry

about it. Meanwhile, we can be comforted by the assurance that the quattro-vigintiacophonists of that remote era, if indeed they shall not by that time have hit upon a more permanent solution, would be the less justified were they to berate our less refined generation for its more excusable failure. They will be the more inclined to render us thanks each day for bestowing upon them their most elegant and unprecedented sectarian title.

But before we are transported by this vision of almost infinitely permutated permutation and of almost infinitely multiplied multiplication, we had better consider what the play of these impressive numbers implies. Otherwise some bumbling second violinist may return us unceremoniously to earth, at the least propitious moment of trans-nebular flight, with a ludicrously naive question as to the comparative intonation of a half-sharp F and a three-quarters-flat G. For upon the raising of so elementary a practical question, suddenly all is lost. We can neither expand the dodecacophonic principle to encompass rows of more than twelve terms; nor, if we could, would that save us from the fate of exhausted resources. Woe and perdition overtake us at the brink of success, and all the power of our sovereign will has gone for naught.

That there are or can be neither more nor less than precisely twelve ideal tones within the musical octave, no dedicated dodecacophonist will dispute. With dispute he is sufficiently familiar. Let us but read here and yonder the gentle lashings with which he has greeted the advocates of various microtonal systems. The sweetly reasonable odour of their scorched flesh still lingers on the breeze. What, quarter-tones? Sixth tones? A nineteen tone supra-diatonic acousticon? Thirty-one tones measured by microscopically exact pythagorean fifths? Away with them all! In the beginning were twelve tones; in the end there will be twelve tones; forever and amen, there can only be twelve tones. Thus spake the prophet who first announced that musical systems, having a history, are not eternal.

The approved twelve tones have furthermore been measured, compared, adjusted, re-adjusted and polished within a miniscule of their lives, to ensure their absolute equality under the law. For the law has declared that the twelve tones must lie at equally tempered distances; at micrometrically equal distances; at distances measurably equal in cents, the twelve hundredth parts of an octave; at distances measurably equal to the twelfth root of 2, carried out to sixty-seven pinched decimals. Let the least whisper of inequality intrude and the twelve tones begin to quarrel; the random choice which lies at the heart of the dodecacophonic principle is violated. Then is the devil of tonal tendency instantly recalled to life, to herd us with his triad-ent back, ever back, relentlessly back again to the humdrum world of mere people, where the obsolete art of music still holds sway.

What is that you say? Twenty-four equally tempered quarter-tones can also be established, micrometrically equal to the twenty-fourth root of 2? Catch that scoffer and trounce him till he has not enough teeth left to pronounce twenty-four quarter-tones! And do not venture on such heresy again, for it offends the most equable temperament.

Bluntly put or daintily put, it all comes out the same. To employ more than twelve different tones would require microtonal divisions of the octave. It would require, specifically, at least two distances less than a half-step in extent. It would require—Save us! How often can even-tempered dodecacophonists be expected to undergo virtual assault? Who provokes distemper among the patient of these hallowed circles? Who dares disrupt the eternal balance between the inner psyche and the cosmos, symbolized by the golden section and 1.05946. . . ? Lurks there still the sceptic and the scoffer?

So be it. No procedure or subtlety of calculation allows for even a thirteenth division, not to say a twenty-fourth, that does not also remove a sliver from the primordial half-step. Let us resign ourselves: less than a half-step shall never obtain a passport to twelve tone land.

Well, we have no intention, having regard for our teeth, of opposing so placid and reasonable a view, supported by the strongest assortment of bare-faced assertions that ever hid lack of proof. Furthermore, we do not object to equal temperament, even though it was first adopted for musical purposes; and we have no desire to exhume microtonist views. Sufficient unto the hour is the trouble of handling tones and semitones, without anything smaller around to fall between the cracks.

Anyhow, it transpires that the anti-microtone crusade was a total waste. For it would make no ultimate difference to the dodecacaphonic principle if microtones were admitted freely to citizenship; if they were granted honours and privileges hitherto reserved for the original twelve tones; if they were then allowed to send for their friends and relatives, down to the last quarter of a schisma. For innocence, once lost, is lost for ever. The deadly secret is abroad that the proud twelve tone system, microtone transfusions or no, faces eventual starvation.

As long as you deal with a finite number of permutations, let the number and its multipliers be as large as you will, let the total stock be drawn upon as slowly as you will; sooner or later that number will be depleted. A tridecacaphonic order will be exhausted less rapidly than a dodecacaphonic, and a quattrodecaphonic order less rapidly still. A quattrovigintiacaphonic order could be made to serve for a very, very long time indeed; for an unconscionably long time. And even higher orders might be postulated, which need not even halt at the threshold of auditory discrimination, of which the subconscious ear need not be one whit mindful. Yet inevitably and inexorably such higher order would end, and with it would end also the principle once regarded as everlasting. Its life would ebb away; it would die of sheer exhaustion.

Thus would the shaky and unwelcome succour offered by the despised micro-tones be to no lasting profit. And grief piling upon grief, for the dedicated dodecacaphonist, what is fated to happen eventually has already happened. For he has discounted the whole of the future, and spent all his anticipated income. Exhaustion predictable in theory is the same as exhaustion that has occurred in fact, just as with the tonal system; let no error in calculation or omission of observation gainsay it! *Quid* comes hard *pro quo*; yet let the

appalling truth be faced, though ruthless Fate ravage our bones. The old tonality, it is said, is long since dead; but one day the dodecacophonic principle also will lie bloodless and dessicated before us, and we shall be powerless to save it.

Yet saved it shall be, and gloriously, by the mysterious genius of the thirteenth tone. For let it now be recognized, this is no ordinary tone of which we speak, the task to which it has been called being no ordinary task. The thirteen tone system is by no means merely a tridecacophonic system; it is not just a technique of ordering thirteen distinct terms. It is indeed but the familiar and beloved twelve tone system, but viewed from a novel, inverse and unfamiliar vantage point. It is the twelve tone system transformed, sublimated, trans-substantiated into an eternal and inexhaustible vessel matching in creative magnificence the sovereign will it is destined to serve.

Enough of the mystic fervour; let us move on to the discovery of the magic thirteenth tone, to which all of the preceding has pointed. What conditions must this thirteenth tone fulfill? It must be capable of statement as a purely mathematical abstraction, and it must comply with two conditions. The first is that it introduce no disturbance of the relations among the original twelve tones; it must insert among them no microtonal division whatsoever. The second is that its introduction engender a factorial multiplication whose product shall be infinitely large; its use must disclose a permanently inexhaustible source of different twelve tone rows.

Given these two difficult and perhaps mutually exclusive conditions which the desired thirteenth tone is to meet, we may judge at once why this is no ordinary series term. It is not, for example, the number 13; since, as we have already discovered, introduction of the number 13 would cause at least two microtonal relations, which are excluded by our first condition; and the total number of tridecacophonic rows would be $13! = 6,227,020,800$; which, even assuming for simplicity that they could all find use, would be a large, but not an inexhaustibly large number; thus violating our second condition also. Therefore, since it can meet neither of our required conditions, the number 13 cannot represent the new tone we seek.

Quick trial demonstrates that our conditions also cannot be met by the numbers 14, 15, 19, or 24; in short, by any number higher than 13. True, the higher the number we choose beyond 12, the larger will become the available total of potential rows. But that total will never become inexhaustibly large, while each increase will cause correspondingly smaller and more numerous microtonal divisions.

Thus the mysterious thirteenth tone cannot be represented by the number 13, nor indeed by any number higher than 12. Let us see if the numbers less than 12 can be more fruitful.

If we seize upon any integer from 1 to 12, our situation is far worse, for we have nothing more than a number already included in the dodecacophonic series. And since the principle of that series requires that none of its terms may be repeated, we must at once relinquish such duplication, and the solution becomes absurd.

Perhaps we may escape this difficulty by regarding the new term as a number between 1 and 12 indeed, but representing, not a duplicate of a term already present, but rather an addition to the whole. Perhaps in this fashion we might wire up a twelve tone plus one series, or a twelve tone plus two series, and so on. But this quibble is if anything more absurd, since the sum we obtain turns out to be a number 13, 14 and so on, which we have just found incapable of meeting our need.

So the desired thirteenth tone, if such there be, is not to be represented by the number 13 or any higher number. Neither can it be represented by any positive whole number from 1 to 12. Can it then be a fractional number, or a negative number, or an irrational number, or an imaginary number, or perhaps some stranger breed? Can it indeed be expressed as a number at all, having a demonstrable validity at least as a mathematical concept?

The search becomes edifying at this stage, and the trail warm. Therefore we may easily lose our heads if we do not continually remind ourselves of the precise nature of the dodecacophonic principle and of the mathematically framed conditions for solution. Let us first consider fractional terms. A fraction less than unity, applied to the set of twelve tones, could only signify the presence, not of an abstraction of a musical tone, but of an abstraction of some aliquot portion of that musical tone. We are startled to recognize in vivid paraphrase the common definition of harmonic partial! Our hypothetical fraction suddenly seems to arise out of the very bowels of Nature, out of the familiar splitting of a complex tone into fundamental and overtones, out of the ever-flowing fount that has fructified the most preposterous among predodecacophonic theories of music.

Barely overcoming the pull of the magnetic overtones, and with our senses blurred from nostalgia, still we must skirt this attractive by-way, and hasten on. No reference of the sort to the resounding overtones is tenable. For as we have seen, the serial numbers of dodecacophony do not relate to real musical tones, which are nearly always highly complex, with fundamental and overtones galore. These numbers refer instead to wholly abstracted, unidimensional essences of serial rank, and tones themselves with all their complex properties have disappeared.

The twelve tone system, in other words, does something like utilizing the recollection of a squeal, without any pig. The absence of said pig makes it impossible to evaluate any of its slices; certainly any slice of its squeal. Now the concept of an aliquot fractional recollection of that squeal might still bring about either an interesting surrealist image or a headache. But we shall not attempt to set either of these down in numerals.

As to fractional quantities larger than 1, which may be regarded as integers plus fractions, were they to have any application in this context, they could only refer to microtonal interpolations of insufficient multiplying power. Either defect would be sufficient at this point to exclude them from further consideration. Our thirteenth tone is thus not to be represented by a fraction, whether less or more than unity.

Comparable difficulties of definition attend us if we seek to interpret the

thirteenth tone as a negative number. But the possibilities of a number that is negative and/or imaginary uncover a wider range for speculation, though one more unnerving than amusing to our mathematician friends. For were we to translate certain common dodecacophonic practices into the language of plane analytic geometry, the inversion of a row, which might then be thought of as a mirror image formed at a horizontal abscissa, might be described as an application of negative signs to the series terms. The retrograde form might similarly be thought of as a mirror image reflected at a vertical ordinate or bar-line, which we would therefore enter as a multiplication of the series terms by the square root of minus one. And the retrograde inversion, cast by simultaneous horizontal and vertical mirrors into the remaining south-western quadrant, could in the same fashion be formulated as the imaginary negative form of the row, each series term being multiplied by the negative square root of minus one. Do you want to try for twelve tone pi?

But nowhere in this topographic jungle do we discover the elusive thirteenth tone. As for the possibility that it might yet be an irrational number, we are tempted to reach once more for the twelfth root of 2 in which equal temperament is solved; since we suspect subconsciously that it ought somehow to be relevant to the situation, and since the dodecacophonic principle encourages us to saturate the field with all manner of random associations of all possible elements in the hope of emerging with something or other. But after a momentary pause for subsidence of the Rorschach trauma, we ponder in despair that multiplication by an irrational number might fit twelve tone theory, but never its data; that it would surely produce microtones, but never an inexhaustibly large number. It may also occur to us that while the twelfth root of the aforementioned pig may be somewhat difficult for ordinary mortals to conceive, and the twelfth root of its squeal somewhat more difficult, it would tax even dodecacophonic insight to extract a twelfth root of the recollection of that squeal. We hesitate to ascend so teetering a pinnacle of distress, at least for this week.

While these exploratory excursions are thus far unsuccessful, they are nonetheless instructive. Never again shall we underestimate the difficulties of making the twelve tone system appear either rational or workable, even in its own terms. It is the more remarkable that the system has endured this long, and that in the meantime few dodecacophonists have penetrated to the tangled internal mathematics with which we are forced to deal. Yet we ought not to criticize a principle resting on so unsure a foundation, merely because our quarry still eludes us. It is all too easy to show how absurd is every premise of the system, save its emphasis on avoidance of anticipation. Let us seek rather to conserve and to build, and if need be to rescue from its otherwise certain oblivion a genre of harmless speculation that has entranced so many well-meaning people, and that has successfully diverted them from the pursuit of musical art, leaving that much more room for the rest of us. Only through charity, along with faith and hope, will our goal of a fool-proof thirteen tone solution for the twelve tone system be achieved. Let us proceed.

There is a thirteenth tone, the numerical representation for which can yet

be extracted, which will meet the difficult conditions set forth, and which will thus resolve the discrepancies of the dodecacophonic principle. Furthermore this thirteenth tone can enter into the twelve tone system in two opposite and reciprocal roles; thereby fitting in neatly with the general leaning of the system towards upsiversies and contrariwisies.

Our analysis already indicates that whatever number be found for it, the thirteenth tone can be neither added to nor subtracted from the twelve terms of the original set. Addition would bring us only sums higher than 12, which we have seen prove useless. Subtraction would infringe upon the primordial twelve tones themselves; an unthinkable rudeness. A quandary would then appear as to whether we would meet with an asymmetrical or crooked and therefore tendentious set of tones, were these to be merely less than twelve in all; or with a completely balanced and symmetrical series, say of x number of equal y -tones. But of course the y -tone series lures the dedicated dodecacophonist to the fate worse than death. She speaks only French, and we thus dare not name her even in a purely objective and scientific treatise.

A further hint that not addition and subtraction, but multiplication and division, are the proper functions whereby the thirteenth term enters the reformed series, comes from the factorial calculation itself. For clearly, if we aim to produce an inexhaustible number of rows from the initial total of $12! = 479,001,600$, it stands to reason that some heroic degree of multiplication is involved. And the process of division is, naturally, nothing but the reciprocal or inverted row form of that multiplication.

Extreme care must be exercised in dealing with these seemingly fine threads during our investigatory procedure. But our reward shall lie, not only in that the path to illustrious discovery is made the more certain; but also that in the end we shall perceive as well the subtle yet sublime distinction between row and reciprocal, as that between multiplication or division by the thirteenth term. For that delicate distinction, hitherto quite imperceptible, may grow to make the difference between complete success in our venture and abysmal failure. Besides, such tangential discussion prolongs the suspense until the brass section can enter; we are about to requite the reader's patience.

The thirteenth tone, then, would seem to be represented by the number $\frac{1}{6}$. We observe that if the total number of possible twelve tone rows, which is $12! = 479,001,600$, is multiplied by this new term $\frac{1}{6}$, it yields any desired number of permutations. The product thus seems an inexhaustible number, just as required. And since $\frac{1}{6}$ cannot itself represent the abstraction of any musical tone, or fragment of its squeal; since it cannot fulfill mathematically even an imaginary point or an imaginary event; that value would seem also to meet the remaining condition that the established equidistant series of twelve tones be not disturbed by microtonal interpolations. The number $\frac{1}{6}$ would thus not represent an additional tone in the usual sense; that is why we do not add it on to the series. Rather would it be a mystic co-ordinating factor, almost literally out of another dimension, serving to unify and to rationalize the twelve tone system without itself entering into the operation of that system.

And thereby we also avert the very serious danger, to which we have hitherto

given insufficient attention, that the magic thirteenth term might become an important one in its own right; that it might become, indirectly or conceptually, a centre of attraction, or at least of differentiation of function; that it might become—horrors!—a new kind of tonal centre. This cannot happen, for we cannot set down the number $\frac{1}{0}$ as a note.

The hypothetical figure $\frac{1}{0}$ is thus not a new sun surrounded by planets. Rather is it a theoretical *locus* in a mystic space wholly outside the universe in which the twelve absolutely equal, absolutely self-contained and absolutely independent row-segments revolve about each other in purely random patterns. It is the one theoretical element which can guarantee that these random patterns may continue throughout eternity without ever a repetition.

But hold! will cry our old friend, the sceptic and the scoffer. This is no solution at all, but merely sleight-of-hand with numbers to mystify the unsuspecting, as ever with dodecacophonic calculations. Why, the procedure is nothing but transparent camouflage for the stale mathematical fallacy of division by zero. There is no thirteenth tone here, just covering verbiage by which the permutation result 479,001,600 is divided by zero. Of course this fictitious term $\frac{1}{0}$ stands outside the universe; for the division by zero is not an answer, it is a fraud. Its result is not the infinity claimed, but simply an indeterminate number, which is not at all the same thing. This is nothing but a trick centering upon a property of the normal mathematical universe, which excludes division by zero as a meaningful operation.

As usual, our sceptical friend is right in every detail. And as usual, his rightness will be to no avail; let it be confessed here and now. For since when did exposure of some glaring elementary fallacy upset any claim about the dodecacophonic principle? Since when did it become a substantial objection to the twelve tone system that its premises were inconsistent or untrue, or that its evidence consisted of brash assertions endlessly repeated, or that its aura of profound logic obscurely worded broke apart at the first test? Since when is the doctrine of the twelve tone system, or any other kind of astrology, supposed to give way to mere truth?

The dodecacophonic principle has outlived all such merely intelligent exposures, from its inspired inception to the present. And by grace of the thirteenth tone, may it continue to flourish for ever. Only a revival of interest in the art of music can threaten the sway of the twelve tone system. Onward, ever onward, brave dodecacophonists!

And besides, we have not finished with our sceptical friend, nor with the thirteenth tone. We have considered the effect upon our problem if the thirteenth tone would *seem to be* represented by the number $\frac{1}{0}$. And in tracing its meaning, though in the end we failed, we have found that our conditions can be met, and we have confirmed that the new term must be applied to a transcendent multiplication of the number of *Ur-form* rows. We have learned that such multiplication in reality conceals the reciprocal process of division; in our instance, of division by zero, which is ruled out. But what might we obtain, were we to reciprocate the reciprocal, as we might invert the inversion of a tone row?

Instead of multiplying by $\frac{1}{12}$, which is equivalent to dividing by zero, suppose instead that we multiply our $12! = 479,001,600$ by zero, which is the equivalent of dividing it by $\frac{1}{12}$. Will it be claimed that multiplication by zero also has no meaning in the normal mathematical universe? Not so, friend sceptic; its meaning is well established and definite: the product is zero. We have found the true thirteenth tone after all, and an indisputable one. Victory is ours, and we need but seek its tone equivalent.

And how does this new and correct thirteenth tone, this long-sought zero term, affect the situation of our otherwise doomed twelve tone system? We observe immediately that introduction of the zero term does not violate our condition that microtone divisions be proscribed. Zero removes nothing from any half-step. Before analyzing its multiplying effect, which meets our second condition and gives the zero term a physical value, it would be well to examine a relevant conceptual source for the twelve tone system, which we can now guess bears the ironic title system only because it is so far removed from a unified field theory.

This relevant source is the requirement of utterly random choice, which drives the human element out of the procedure, and thereby dispenses with music, which cannot help reflect that human element as its sole basis for existence. In order to lend substance to the claim that the system attains completely free relations among twelve absolutely equal terms; in order to justify the rule of non-recurrence, lest recurrence destroy this perfect equality and thereby reveal a tonocentric tendency; it necessarily follows that random choice must inhere in the dodecacophonic principle. Some people are under the illusion that it is even adhered to in practice. The converse does not follow; not all random choice procedures with musical notations result in the twelve tone system; ink splatter technique is just one thriving competitor. Random choice for our purposes must mean that in establishing a row or its transmutation any tone or distance must be able to precede or to follow any other, with none showing the slightest urge either to predominate or to introduce a dependent consequence.

Now it is granted that this requirement of random choice is necessarily violated in practice, because not even dodecacophonists are perfect, and because during the formative stages of dodecacophony it was held essential to avoid accidental resemblance to the barbaric tonal music that formed its prehistory. We have noted that this temporary concession to expediency had the effect of restricting, at least for a transitional generation, the types of tone rows deemed worthy of exploration. Some recent critics have contended that, quite apart from this declared and temporary inhibition, tone rows in actual use show certain types of non-random bias, intentionally or not, openly or surreptitiously. For example, the statistical prevalence of concealed chromatic segments has been observed; likewise a tendency, never openly avowed, towards a juggling of rhythmic values, vertical blocks and junctures of series segments and transmutations, such that the dread ghost of tonocentric orientation has been known to walk again, and reputable dodecacophonists have furtively admitted to hearing its creaking tread. There has even appeared a

hint that the distinction between the various styles of early twentieth-century chromaticism and the classics of dodecacophony is by no means as clear cut as the enthusiasts over the latter have claimed. That would imply that the twelve tone system is but a chapter in the recent history of music, now almost over, when the elect know that its time is of a more celestial scale and its nature of another sphere entirely. But we had better not pursue these suggestions seriously, lest we come upon all sorts of fateful evidence.

Despite these deficiencies, it is readily conceded that however much it is thought to have failed in practice, the theory of the twelve tone system calls for completely random choice. Therefore we cannot fathom why the early prophets and their closest disciples did not at once discover the ideal contrivance for the rapid creation by random means of all possible tone rows. We leave aside the kaleidoscope, the uses of which belong to the optical rather than to the auditory market for dehumanized abstractions. We also leave aside reluctantly the electronic computer; first, because it was developed too late to have assisted at the birth of the dodecacophonic principle; second, because not even the most expensive one yet designed could have uncovered the clue needed for tracking down the essential thirteenth tone, though that clue was present all along.

This ideal device for the bubbling up of random tone rows, a process commonly called primary sovereign creation, is simply a roulette wheel. To chart a twelve tone row, watch where the little ball bounces, put down the number at which it stops, place your bets, and spin again. Lubricate often and freely and just ignore accidental repetition. There is nothing so completely abstract, so completely impersonal and objective, so completely immune to paltry human dreams and aspirations, as the garden variety of roulette wheel. Therefore nothing is quite so useful and appropriate for the unfolding of new tone rows. Do you ever become bored and irritable? Are you periodically vexed by the workaday world? Did you misplace today's quota of tranquilizers? Do you need to get away from it all? Then what you need is dodecacophony, in stereo. Be rejuvenated. Visit the roulette table.

Does this seem a digression from the discovery of the thirteenth tone? It is rather the kernel of the truth. The thirteenth tone is represented by the number zero. If we multiply the total number of possible twelve tone rows by this zero, the answer is zero. If we insert this zero at any point into any tone row, we add nothing and we divide nothing, literally nothing, not even a microtone. The mystery of the thirteenth tone signifies that by its means dodecacophonic construction is brought to naught.

But what sort of musical tone is represented by zero? What is its concrete substance? For behind all illusion lies a thread of reality; behind the figment from which even a dodecacophonic entity is spun lies initially a musical tone. What tone is number zero?

Very plainly, the thirteenth or zero term, though a true and familiar reality in music, is not exactly a tone in the usual sense. It corresponds obviously to a rest, to measured silence. The thirteenth tone, numerically equal to zero, signifies simply utter silence. That is why, when it is introduced into a twelve

tone construction and there allowed to multiply, the composition is not disturbed; it merely vanishes when *none* is there. That is the secret of the thirteen tone system at last: it means a twelve tone system multiplied by endless silence.

Does not the roulette wheel of old contain this answer? For every roulette wheel has a zero, as well as integers proper on the red and the black. When the little ball falls on a red or a black number, we have hit upon the lucky winner in a completely random series of twelve terms. But when the little ball lands on the thirteenth term, on the zero, then the bank wins. The croupier silently rakes in the bets. It is then traditional for the player who has lost all to borrow a pistol (with a silencer), stroll out in dignity behind the house, and there carry out the *mystique* of the thirteenth tone so discreetly that the game may continue without fuss.

That is also the fitting solution for the serial technique. It is at once saved and destroyed by the introduction of the thirteenth tone, the zero term, the long-awaited silence. The zero term is the greatest boon ever bestowed upon the twelve tone system. It is the single element that encompasses all its past and future, all its logical constructions and its illogical precepts, all its intellectualized mechanics and its self-conscious subconscious, all its parody of musical art for non-musical ends. The twelve tone system comes full circle, comes to its o and is resolved, like a leading-tone to its keynote. Its earthly ills have ceased, and it has earned eternal salvation. The thirteen tone system, by providing the finality of the zero term, brings the twelve tone system to grace, to fruition, to its ultimate peace. Let us pray for its resolution in profound and infinite silence.

REVIEWERS

H. K. — HANS KELLER
H. C. R. L. — H. C. ROBBINS LONDON

The New in Review

SYMPHONY AND SONATA TODAY—II

BY

HANS KELLER

THE ultimate reason why the symphonic problem in general, and our symphonic crisis in particular can best be examined in the string quartet is that, in the realm of colour, the quartet texture depends on the finest possible differentiations. These, at times when great symphonic thought is unharassed by any worries about inadequate contrast and integration, help to create symphonic structures whose wealth of relations cannot, *ceteris paribus*, be equalled in the orchestral symphony itself, as witness the string quartets of Haydn and Beethoven and—a textural variation here—the string quintets of Mozart (even more so than his quartets). But conversely, when the essential purpose of sonata form, *i.e.* the large-scale integration of thematic contrasts,¹ is threatened by a decline in the powers of developing diversity while retaining unity (the two sides of the same expressive coin), it is the string quartet that shows the first signs of serious strain, because it cannot draw on those resources of drastic tonal variety and contrast that are at the disposal of the orchestra, and which help, for a time at any rate, to reinforce the weakening sources of symphonic construction. There is an intrinsic correlation between the development of the romantic symphony, with its widening of instrumental resources, and the crudification and decline of the string quartet after Schubert—a decline from which, significantly enough, only a Mendelssohn, harmonically a natural conservative,² could keep himself apart in truly splendid isolation. For the loss of triadic power over large-scale structures, the weakening of concentric key and the inexorable rise of the norm of dissonance, turned unification and diversification alike into thorny tasks; indeed, the very establishment of even a modest contrast, involving as it does not only thematic contrast as such but that contrast between statement and development (transition) which makes the evolution of wide-ranging thematic contrasts possible in the first place, was to become a matter for mastery rather than a matter of course.

This, then, is the symphonic problem which has produced our symphonic crisis. The fact that the decline of the string quartet has been hastened by chamber music's departure from the chamber—by the increasing importance of the concert hall and the development of string technique with its attendant, all-pervading professionalism—does not obscure the detailed picture of the symphonic crisis which the history of the string quartet produces. Schönberg's own quartets represent, in fact, the concisest possible history of the crisis as well as of its possible resolution. In the first Quartet, symphonic unity and diversity are retained through the compression of the several symphonic movements into one, in spite of the weakened—at one point already non-existent—key feeling. In the second Quartet, the threat of atonality is countered by the integrating influence of a text. In the third and fourth, however, sonata form proper re-establishes itself without the help of either one-movement form or a text, because the twelve-tone row supplies a new unitary basis for thematic contrasts and for the differentiation between statement and development—a basis as strong potentially as the diatonic one at its most powerful used to be. The fact that only one or two composers have been able to follow Schönberg on this road merely shows that contrary to appearances, real serial technique is only in its beginnings. To date, the Schönberg quartets remain the greatest symphonies of our time.

¹ See part I of the present article, MR, February 1961, p. 52.

² Despite such occasional explosions as the beginning of the "Wedding March" from the *Midsummer Night's Dream* music—which, rather shockingly, seems to have ceased to be an attractive shock to its listeners.

Opera

COVENT GARDEN

First London performance of Britten's *A Midsummer Night's Dream* 2nd February

c. Georg Solti

THE three-act opera, with its libretto adapted from Shakespeare by Peter Pears and Britten, was first performed at the Aldeburgh Festival on 11th June, 1960, under the direction of the composer, who has adapted the score to Covent Garden by way of string complement. Under Solti's skilful command and with Sir John Gielgud's musical production (as opposed to John Piper's artificial, uninspired, unevocative and inconsistent *décor* and lighting), the big version proved as marked a success as the intimate one, even though none of the singers, with the possible exception of Geraint Evans (Bottom), gave a performance worthy of his or her part. As for the parts themselves, their musico-dramatic substance and characterization, they manifestly are the work of ever-evolving genius, though again with one possible exception—Oberon, who, *qua* counter-tenor, would seem to remain open to criticism. Last year, when Alfred Deller sang the role, I had to force myself to receive the musical message; this time, with Russel Oberlin seeming to contrive rather than communicate it, I could not even force myself. Perhaps I do not understand Britten's terms of tonal reference in this particular instance; perhaps I don't get this type of sound with the spontaneity necessary for real musical comprehension. I am sincerely ready to blame myself—to extend a credit account of trust to a composer who has so often proved that when he seems to disappoint one, it is really one who disappoints him, unable as one is on those occasions, at any rate to begin with, to live up to one's obligatory role as an ideal listener. At the same time, the number of possible ideal listeners in any given case is limited, *inter alia*, by cultural background and upbringing; and the question of whether a composer can be blamed for the narrowness of such limitations is not always an easy one. Composers are certainly praised for the relative absence of cultural barriers by such overstating phrases as "universal appeal", and nobody blames Beethoven for not being a popular composer in India; but the Austrians blame Vaughan Williams for not being popular in Austria; the English, in the shape of Frank Howes, used to blame Bruckner for not being popular in England; while I blame Shostakovich (whom I regard as the greatest symphonist alive) for preferring, by public implication, Villa Lobos to Schönberg, for failing in his duties as an ideal—or rather an unideal listener, duties which include the obligation to shut up in view of one's cultural limitations. Objectively, the crux of the matter is, of course, whether the limitations are the composer's or the listener's, and in many cases they are distributed between the two in a way that would require the most strenuous efforts on the part of musical jurisprudence in order justly to apportion relative guilt. This would certainly be a task worthy of the name "criticism", except that nobody would be interested in the verdict because the reasons for it would take pages. In any case, Britten's counter-tenor would seem to me to be a complicated case of this kind; it certainly is significant that failures adequately to respond to the part seem to come chiefly from the ex-Continental quarter: there are a few English musicians who object to it, while so far I haven't met a single foreigner or ex-foreigner who doesn't. The facts are significant, however you wish to evaluate them; and there the matter must rest, until I have heard the work more often and studied it more deeply.

Where, conversely, English criticism has gone simply and violently wrong while Continental criticism has proved, paradoxically, much more realistic and appreciative,* is in the evaluation of the sublime parody in the last act. The English never survived Shakespeare (Britten, incidentally, being of course one of them: his treatment of the words on this occasion is distinctly more cautious, less adventurous, though no less inspired, than in any of his previous operas). Even though the context warrants it in all conscience, this parody shocks them out of their (otherwise so dependable) wits. It is true, of course, that the scene presents a most surprising contrast, which bears the deceptive appearance of superficiality and, hence, vulgarity, or at least triviality. But this is part of the contrast's greatness, and the way Britten retains unity and—within the shortest possible time—continuity, proves my case. Shall we never learn? Again and again in the past, great composers have been blamed for their greatest virtues—their capacity for extreme contrasts, their courage to defy "taste", which is convention, and to say new things by way of what we might call the provisionally banal. (The connection is intrinsic: the newer your expressive content, the more you have to heed established, "banal" means of expression in order to remain comprehensible.) Britten's ultimate master stroke here is to take parody, which as an art form shows all the signs of old age, and use it as a means of communicating new truth. Significantly enough, the critics of Britten's parody have been unable to disentangle and pin down its objects. They are like those Gershwin critics who are incapable of whistling "The Man I love". The conclusive reply to either lot is—if it's banal, it demonstrably isn't banal enough for you.

H. K.

VENICE

Intolleranza 1960 by Luigi Nono, *azione scenica* in 2 parts after an idea by Angelo Maria Ripellino. First performance: Teatro La Fenice, Venice, 13th April, 1961. Cast: An emigrant—Petre Munteanu, tenor; his [female] companion—Catherine Gayer, sop.; a girl, Carla Henius, contralto; a rebel—Heinz Rehfuss, baritone; a tortured man—Italo Tajo, bass. Production: Vaclav Kaslik (Prague); costumes and sets: Emilio Vedova. The BBC Symphony Orchestra, conducted by Bruno Maderna.

On the other side of the "Iron Curtain" music and politics have long been inseparable. The idea of art for art's sake has, in Communist countries, been regarded as decadent and bourgeois. Music, they maintain, must be written in an idiom close to the people; it must reflect *in toto* as well as in detail the socialistic way of life.

If you live in Italy, where opera now exists (with a few exceptions) on a rarified plane, available only to the wealthy, you can see that there is something in the Communist viewpoint. Italy's popular musical idioms these days are the *canzone*, the juke box, the TV. Classical music and even opera are slowly dying out in the country where they were born.

In this atmosphere, Nono's new opera landed like a bombshell. Briefly, the plot describes a refugee, who longs to return to his native country; he is caught by the secret police of a country through which he passes, is imprisoned, horribly tortured, and placed in a concentration camp. At this point there is an interlude in the plot: with the use of superimposed voices, pre-recorded electronic music and a ballet, we are given a cynical and frightening view of our time. The newspapers fill our minds with vulgar headlines ("Mother of thirteen children turns out to be a man"); our lives are hampered by tiresome official restrictions; and imaginary war clouds pile up. The tension increases, and in fictitious "Dummyland" the spark is ignited, the heavy-laden planes drop their foul products and The Bomb explodes in a moment of nauseating realism. The plot proper then continues: the refugee returns to his country to find it devastated and threatened by floods from the swirling river. He dies trying to save peasants (*contadini*), and in the end the river rises up and floods the stage, drowning everyone.

* See, for instance, Friedrich Walter's "Soltis erste Premiere in London: Brittens *Sommer-nachtstraum*" in *Melos*, Mainz, March, 1961, p. 93.

The textbook is something of a pastiche, including bits of Eluard, Majakowskij, Brecht, Julius Fucik, etc. all of whom are (more or less successfully) woven into the libretto. The central idea, profoundly pessimistic, occurs in the horrendous torture scene:

In nessuna epoca la volontà di esser liberi
è stata più cosciente e più forte.
In nessuna epoca l'oppressione è stata
più violenta e meglio armata.

The lurid torture scenes, the brutality of the (largely twelve-note) score with its accent on screaming brass (the trumpet parts constantly in the Bach *clarino* register), the nightmarish production which used the new Czech "laterna magica" technique now familiar to many Western countries, the hopelessness of the theme—all this made it an opera of our time as perhaps none other except Menotti's *Consul* where, however, the Puccini-like decadence of the score spoils the strength of the basic idea.

Nono was asking for trouble; and he got it. One was surprised to see bearded Teddy Boys mixing among the dinner jackets in the foyer; and hardly ten minutes went past before the elegant, gold, rococo elegance of La Fenice was the scene of stink bombs, toy whistles and neo-fascist demonstrations. At one point the performance actually had to stop, and as the rising tumult threatened to kill the proceedings entirely, an Austrian journalist began to clap loudly; this caught on, row for row, until the house was one roar of applause and the work was—at least for the *première*—saved. Typical end effect: a snowstorm of fascist hand-bills, signed "The New Order", calling all sane people to stop performances of twelve-note music, etc. There was the usual exchange of invective: "Eichmann!" "Communist Swine!" "Fascist pig", and so forth. It was all very depressing; but one must remember that Verdi's *Rigoletto*, Puccini's *Madame Butterfly* and Berg's *Wozzeck* were, in their time, greeted with similar (if less political) cat-calls.

The music is dedicated to the memory of Arnold Schönberg and in particular *Die glückliche Hand*. The score was enclosed with, and divided by, strangely moving choruses (which had been pre-recorded in Milan and floated down, eerily, from four loudspeakers N.S.E.W, located above the gallery); they reminded us that Nono is a Venetian, steeped in the San Marco poly-choral tradition. His brass technique, which is often of great richness and brilliancy, is also the indirect descendant of the Gabrielis, whose multi-choired *pian e forte* texture was also born in the cathedral of San Marco. Nono shows a sure understanding of a large orchestra; he is reported to have been very pleased with the performance of the BBC Orchestra, which despite the cat-calls and stink-bombs, finished the score with true British stoicism. (Incidental remark: angry British musician says to RAI [Italian Radio] reporter: "we played through the German bombs, and so a few of your silly fascist teenagers can't upset us".)

Unlike Schönberg, Nono is essentially an Italian and has, like most Italians, an intuitive rather than an intellectual approach to art—and indeed to life in general; there was one lovely lyric section for the refugee's companion (Gayer) which derives from the spirit rather than the letter of the *Glückliche Hand*. Nono's sound is often shocking, as is Schönberg's, but there is a vast difference between the tortured conscience of *Moses und Aron* and the Angry-Young-Man protest of *Intolleranza 1960*. Schönberg's protest is a protest of the intellect, on whom the disgusting events of 1933-45 registered themselves by a withdrawal into the most secret, profound recesses of the mind; whereas Nono reacts like a true Italian, by getting up and (as it were) shouting his violent disapproval. The disapproval is no less profound, in Nono's work, for being less intellectual.

One bad structural weakness: the opening of Part II (spoken voices, reading official "verboten" notices, newspaper headlines, etc. with electronic music as a background) is much too long and too obvious. For a composer of Nono's instinctive sense of what is right, what is well proportioned, this was a bad miscalculation; he could cut out a good ten minutes of this part without violating any of the vicious sarcasm (speaker: "per il benessere, il progresso, la pace e la libertà"; although Nono is violently left-wing, he will,

I trust, forgive me if I quote the latest Italian Communist slogan which reads: "The Russians have sent a man into outer space: another triumph for the Communist way-of-life").

Many in the audience were convinced that *Intolleranza 1960* was the greatest operatic experience since *Wozzeck*; *The Times* [William Mann] went so far as to suggest that Nono may be Italy's new Verdi. Whatever may be posterity's verdict, it is clear that in *Intolleranza 1960* a new milestone in opera has been reached. The sound of tortured screaming people has now become something to portray on the operatic stage; and thus politics and music have now been fused, not only in Moscow, but in Venice; we may not like it, but the fusion is here to stay.

H. C. R. L.

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